

SAFETY SUPPLEMENT

TECHNICAL MANUAL

**AEROSPACE EMERGENCY RESCUE
AND MISHAP RESPONSE INFORMATION
(EMERGENCY SERVICES)**

THIS PUBLICATION SUPPLEMENTS TO 00-105E-9 REVISION 10, DATED 1 MAY 2005, LOCATED AT WEB SITE:
<http://www.robins.af.mil/logistics/LGEDA/Documents/to00-105e-9.htm>.

DISTRIBUTION STATEMENT - Approved for public release; distribution unlimited.

**COMMANDERS ARE RESPONSIBLE FOR BRINGING THIS SUPPLEMENT
TO THE ATTENTION OF ALL AFFECTED AIR FORCE PERSONNEL.**

PUBLISHED UNDER AUTHORITY OF THE SECRETARY OF THE AIR FORCE

15 NOVEMBER 2005**1. PURPOSE.**

This supplement provides instructions for update of TO 00-105E-9 Revision 10, dated 1 May 2005, affecting Chapter 19, US Government Various Agency Aircraft. This supplement is an updated file for the latest information regarding the US Forestry Service Inventory aircraft procedures affecting the USFS Fleet based on recent updated requirements. The majority of this section includes Pre-Fire Plans along with vintage aircraft used for Wildland fire management. The USFS requested this information be available on the www.

2. INSTRUCTIONS.

- a. This information, formatted in PDF, can be downloaded and printed from this web site by the end user. Use the most current Adobe Reader for this function, available free from Adobe.com or through your local unit webmaster.
- b. This supplement to Chapter 19 updates information based on newly researched source data information regarding these aircraft. The new file update should be added to Chapter 19 in TO 00-105E-9 Revision 10, and the previous information be disregarded. The end user should save this file and print the affected pages, if applicable to the user's operation. File a copy of this Safety Supplement with the main Technical Order according to current regulations.

NOTE

This information should also be included in mobility boxes where applicable. If your unit or a part of your unit is serving elsewhere, they should be informed of this Safety Supplement and how to obtain it. See TO 00-5-1 for Local Reproduction of TOs and Digital Media guidance.

U.S. FORESTRY SERVICE (USFS) AIRCRAFT PAINT SCHEMES



USFS AIRCRAFT INVENTORY

USFS AIRCRAFT INVENTORY

NOTE:

The aircraft in this section, once used for military purposes, will be briefly described and cross referenced with other similar aircraft where appropriate. Information has been extracted from the *Interagency Airtanker Base Operations Guide Appendix G for Airtankers and Appendix M for Helicopters*. Aircraft are placed in the order they appear, in this current version alphabetically. Fleet membership will vary from state to state. These aircraft are primarily used for firefighting but are not limited to other duties such as transport and cargo usage. Due to the age of these aircraft, some may now be withdrawn from use. USFS Pre-Fire Plans have been added to the original information.

The inventory provided by the USFS consists of:

Aero Commander	DCH-2 Beaver
Air Tractor AT-802	DCH-6 Twin Otter
Beechcraft 58P Baron	Fokker F-27
Boeing 727	Grumman S-2F Tracker
Boeing 737	H-43 Huskie
Boeing KC-97	Lookheed P2V Neptune
C-130 Hercules	Lookheed SP2H
CASA C-212 Aviocar	Model 90 King Air
Cessna 337/ Skymaster O-2	P-3 Orion
CH-47 Sea Knight	PB4Y-2 Privateer
CL-415 Super Scooper	Rockwell OV-10
Convair 580	S-64 Skycrane
DC-3 Douglas Turbine	S-70
DC-4 Airliner	SH-3 Sea King
DC-6 Airliner	Shorts SD 330
DC-7 Airliner	

Additional USFS helicopters included:

Aerospatiale AS 350	Bell 222
Bell 204B/UH-1A,B,C	Boeing/Vertol 234
Bell 204/UH-1D,H	Eurocopter BK-117
Bell 206B/OH-58	Eurocopter BO-105
Bell 206L-3/OH-58	Fairchild Hiller FH-1100
Bell 212/412	McDonnell Douglas 500-C,D
Bell 214	Sikorsky S-58T

RETARDANT SAFETY INFORMATION

CAUTION

The following information is generalized for the variety of retardants used at Air Tanker Bases. This is not intended to replace Material Safety Data Sheets. It is only to be used as a quick reference for training purposes and should not be considered as a reference for use during emergencies!

PRECAUTIONARY MEASURES: Handle in accordance with good industrial hygiene and safety practices. These practices include avoiding unnecessary contact and inhalation of dust, and removal of the material from the eyes, skin and clothing. Wear NIOSH approved respirator.

EYE CONTACT: No more than slightly irritating based on toxicity studies. The dry powder or liquid may cause foreign body irritation in some individuals.

EYE PROTECTION: Wear chemical safety goggles to prevent eye contact.

SKIN CONTACT: No more than slightly toxic based on toxicity studies. Non irritating based on toxicity studies. The dry powder or liquid may cause drying or chapping of the skin.

SKIN PROTECTION: Wear protective gloves to minimize skin contact. Wash hands and contaminated skin after handling.

INHALATION HAZARD: Some retardants contain GUAR GUM which can cause allergic respiratory reaction. May cause respiratory tract irritation. May cause nasal and respiratory tract irritation based on toxicity information of components. Repeated or prolonged inhalation may cause an allergic reaction in some people!

RESPIRATORY PROTECTION: Wear dust mask if dusty conditions exist.

INGESTION HAZARD: Non toxic if swallowed based on toxicity studies. No significant adverse health effects are expected to develop if only small amounts (less than a mouthful) are swallowed.

FIRST AID MEASURES: If in eyes, flush with plenty of water. Wash skin and clothing after handling. If inhaled, remove to fresh air. If breathing is difficult, give oxygen. If not breathing, perform artificial respiration. If swallowed, immediate first aid is not likely to be required. A physician or Poison Control Center can be contacted for advice.

USFS AIRCRAFT

AERO COMMANDER

AIRCRAFT PRE-FIRE PLAN

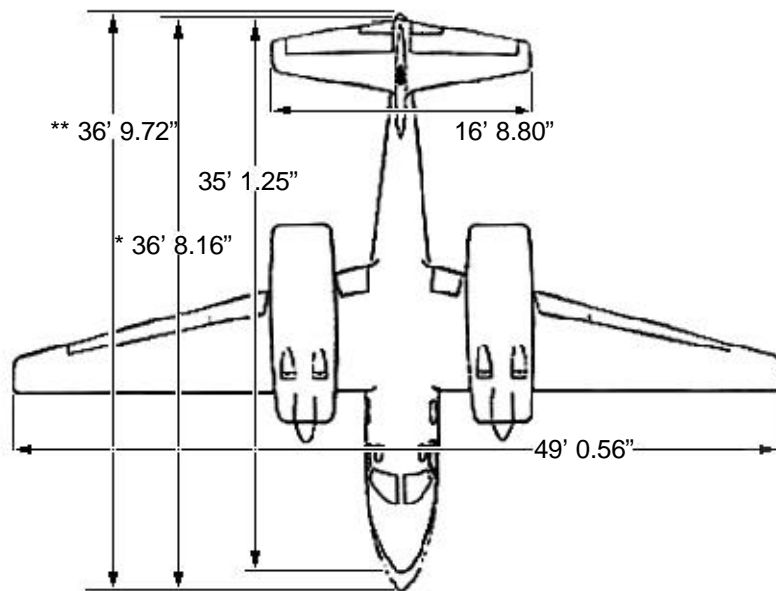
AIRCRAFT TYPE: Aero Commander 500B/U/S "Shrike"

Reference: TO 00-105E-9 & Mfg. Manual

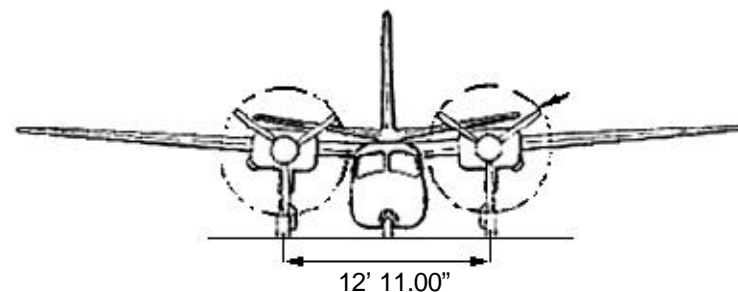
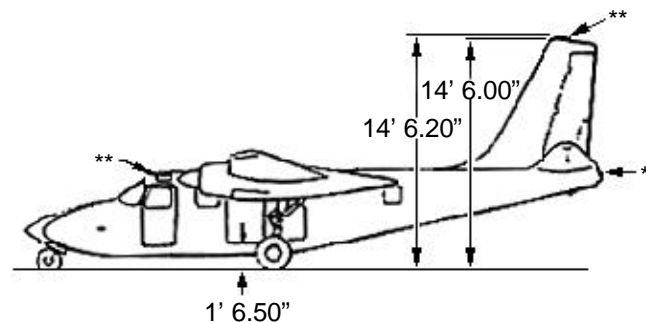
AIRCRAFT DESCRIPTION: The Aero Commander series are high wing twin-engine aircraft that are used for passenger and cargo transportation. The Forest Service has also used them for aerial photography. Many agencies are using the Commander in the Air Tactical Group Supervisor role. The most common type is the Shrike 500B, which does not have a front door. Some other aircraft can be equipped with either piston engines or turboprop engines.

Length (ft)	Wing Span (ft)	Cruise Speed (Kts/mph)	Range (St. miles)	Payload	Number of Pax Seats
31 - 44	39 - 49	169-247 / 150-285	n/a	900-1800	7

* EFFECTIVE SERIAL NUMBERS
3050 AND SUBS, EXTENDED NOSE



** EFFECTIVE SERIAL NUMBERS
3076 AND SUBS, EYEBROW WINDOWS,
VERTICAL STABILIZER CAP, AND
EXTENDED TAIL CONE



USFS AIRCRAFT

AERO COMMANDER

HAZARDS

1. 159 gallons / 1065 pounds of aviation gasoline on-board (fully loaded), located in wings and fuselage.
2. One large or two small batteries located in aft section of aircraft, accessible via battery compartment door on left side of aircraft. Turbo Commander battery access is through the forward wall of the baggage compartment, accessible from the cabin.
3. Propeller danger zone 25 feet
4. Hydraulic system pressurized to 900 to 1075 psi.
5. Hydraulic fluid – 3.2 quarts.

APPROACH TO ENTRY POINT (Engines running 80%+)

1. Approach directly from the tail, avoiding the propellers for a ten-foot radius. (When aircraft is resting on it's wheels, bottom of door frame is 18.5 inches off of the ground.)

PRE-DESIGNATED RESCUERMAN ACTIONS

1. GAIN ENTRY
 - a. **Normal entry** – *Cabin Door* - located left side of aircraft under wing, rotate handle clockwise one quarter turn and swing door out and forward. *Crew Door* – located left forward portion of fuselage near pilot seat, rotate handle clockwise one quarter turn and swing door out and forward.
 - b. **Emergency entry** – Break windshield or windows if entrance cannot be gained through cabin door.
 - c. **Cut-in** – Cut cabin enclosure as required.
2. ENGINE SHUTDOWN
 - a. **Emergency Engine Shutdown**
 - I. Retard power levers, located left side of center pedestal, to full CLOSED position.
 - II. Retard mixture levers, located right side of center pedestal, full aft to IDLE CUTOFF.
 - III. Place Engine Shut-Off Switches, located in guard on center of overhead panel, to OFF position.
 - IV. Rotate ignition switches, one each located on left and right overhead switch panel, to OFF position.
 - V. Place battery switch, located left edge of left overhead panel, to the OFF position.
 - b. **Normal Engine Shutdown**
 - I. Retard power levers, located left side of center pedestal, to full CLOSED position.
 - II. Retard mixture levers, located right side of center pedestal, full aft to IDLE CUTOFF.
 - III. Rotate ignition switches, one each located on left and right overhead switch panels, to OFF position.
 - IV. Place battery switch, located upper left corner of left overhead switch panel, to the OFF position.
3. AIRCREW EXTRACTION
 - a. Unlatch lapbelts from crewmembers.

OTHER FACTORS

1. **Special tools/equipment:** Power rescue saw and crash axe.
2. There is an emergency exit under the right wing. There is no external handle for this exit and it can only be opened from the inside. Fire fighters should be aware that personnel could be exiting through this exit in an emergency.
3. Location of switches and equipment and emergency shutdown procedures may vary for individual aircraft. Crews should be briefed prior to aircraft dispatch.

COMMUNICATIONS PLAN: National Air Tanker frequency – 123.975. This is the frequency used by all air tanker bases, air tankers, air tanker support aircraft during fire fighting operations.

USFS AIRCRAFT

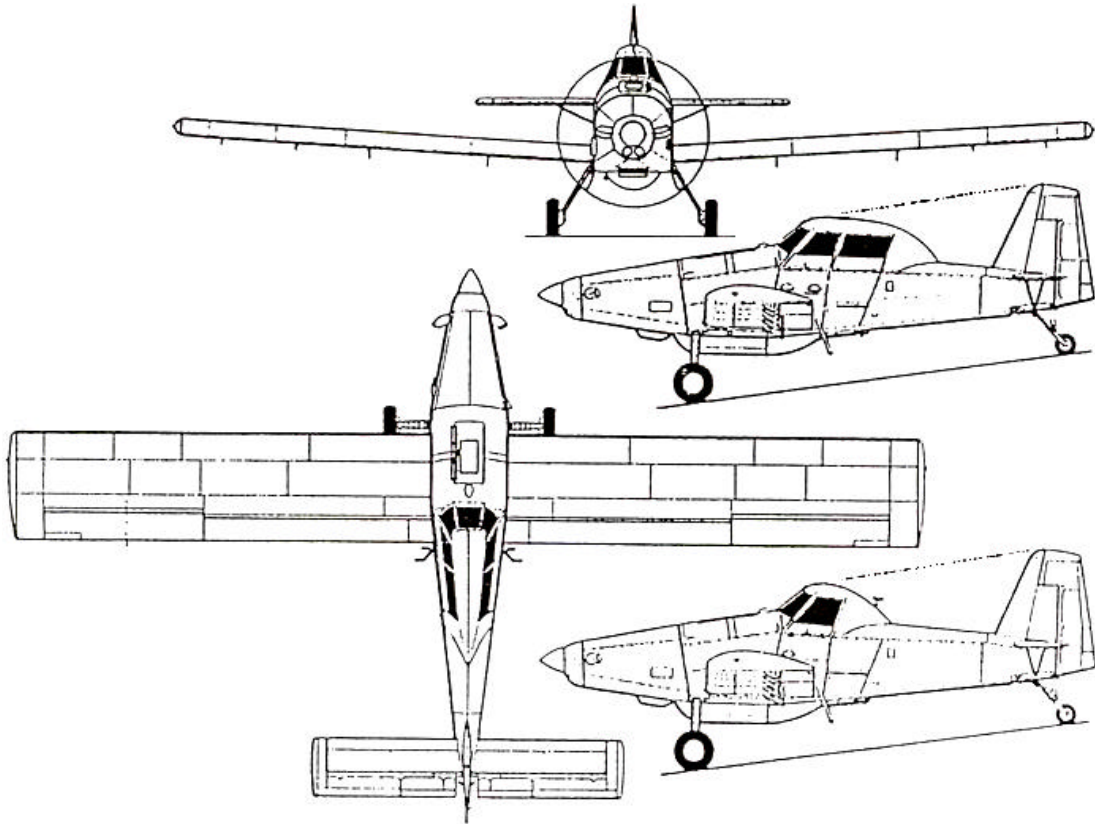
AIR TRACTOR AT-802

AIRCRAFT PRE-FIRE PLAN

AIRCRAFT TYPE: Air Tractor AT-802 Reference: Mfg. Info.

AIRCRAFT DESCRIPTION: The Department of the Interior and various States are currently contracting for Single-Engine Ag-Tankers. Single-engine ag-tankers have been approved by the Interagency Airtanker Board as airtankers. They are very maneuverable and are useful for hitting hot spots, plugging holes in line, reinforcing line, and making short line extensions. These aircraft are not initial attack carded. They are a useful addition at times but are not replacements for large airtankers. There are a few aircraft, designated Agricultural Aircraft by the Interagency Airtanker Board, that are used by some state agencies for wildland suppression but are not approved as single-engine ag-tankers by the Board.

Length (ft)	Wing Span (ft)	Turn Radius (ft)	Cruise Speed (mph)	Range Loaded (St. miles)	Gross Weight (lbs.)	Contract Op. Wt. (lbs.)	Retardant Load (gallons)	Number Gates (Doors)	ICS Type
36.2	59.5	35	196	630	16,000	16,000	800	1	4



USFS AIRCRAFT

AIR TRACTOR AT-802

HAZARDS

1. Crew of one or two – depending on model of aircraft.
2. 380 gallons / 2546 pounds of jet fuel on-board (fully loaded), located in wings.
3. Battery located on the firewall.
4. Fire extinguisher located under pilot's seat.
5. Propeller danger zone 25 feet
6. Turbine blade failure 300 feet.
7. Engine exhaust 30 feet.
8. Oil capacity - 10 quarts
9. Hydraulic fluid capacity – 2.5 gallons

APPROACH TO ENTRY POINT (Engines running 80%+)

1. Approach directly from the side, aft of wing, avoiding the propeller for a ten-foot radius.

PRE-DESIGNATED RESCUERMAN ACTIONS

1. GAIN ENTRY
 - a. **Normal entry** – Turn door handles located at the top of each door, ¼ turn. Doors are located each side of aircraft. Doors swing out and down.
 - b. **Emergency entry** – emergency door release is located at the bottom of the left side doors. Pull the emergency door release cable will release the door from its hinge and allow it to fall to the ground.
 - c. **Cut-In** – Cut around Plexiglas window frame or break out Plexiglas on door windows.
2. ENGINE SHUTDOWN
 - a. Depress the start control stop on the red Start Control Knob, and move the Start Control Knob back (aft). The Start Control Knob is located to the left side of the pilot
3. AIRCREW EXTRACTION
 - a. Aircraft is equipped with a military-style four-point harness with a single release point.

OTHER FACTORS

1. **Special tools/equipment:** Power rescue saw and crash axe.
2. Locations of switches and equipment and emergency shutdown procedures may vary for individual aircraft. Crews should be briefed prior to aircraft dispatch.

COMMUNICATIONS PLAN: National Air Tanker frequency – 123.975. This is the frequency used by all air tanker bases, air tankers, air tanker support aircraft during fire fighting operations.

USFS AIRCRAFT

BEECHCRAFT 58P

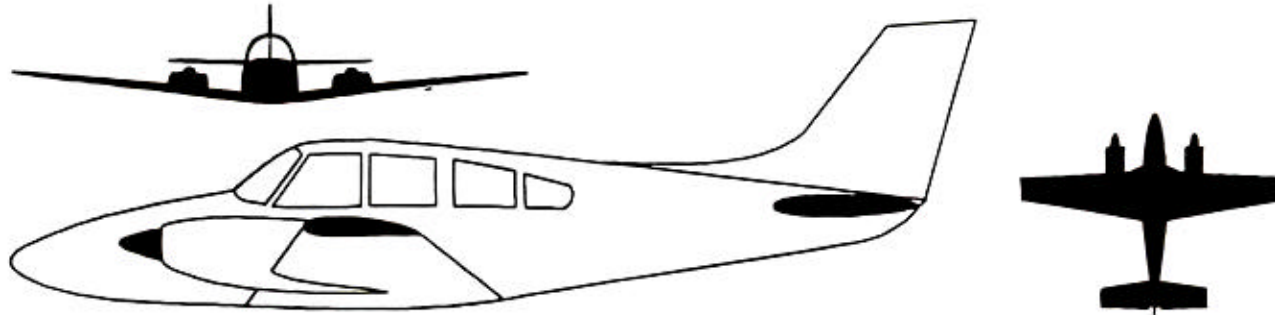
AIRCRAFT PRE-FIRE PLAN

AIRCRAFT TYPE: Beechcraft 58P

Reference: N/A

AIRCRAFT DESCRIPTION: The Forest Service owns and operates several 58P Barons. Barons are light piston-powered airplanes, fully IFR capable and pressurized. They are used as leadplanes for passenger transportation. They are maneuverable, fuel efficient, and can stay over an incident two to four hours, depending on weather and fire conditions. Barons do not cruise as as some new generation airtankers such as the P-3A or the C-130. These airtankers may reach an incident before the leadplane. Each leadplane pilot has a specific designator, for example, Lead 1-5. The first digit indicates the region the pilot is based at and the second digit indicates a specific pilot.

Length (ft)	Wing Span (ft)	Turn Radius (ft)	Cruise Speed (kts/mpH)	Payload	Range (St miles.)	Contract Op. Wt. (lbs.)	Retardant Load (gallons)	Number of Pax Seats	ICS Type
30	38	n/a	185/215	800	800	n/a	n/a	5	n/a



USFS AIRCRAFT

BEECHCRAFT 58P

HAZARDS

1. 166 gallons / 1112 pounds of Aviation Gas on-board (fully loaded), located in wings and fuselage.
2. Two batteries located in nose compartment. (Prop hazard) Press two buttons on handle, located on right side. Handles will pop out. Raise handles and raise hatch. Battery located under floorboard.
3. Propeller danger zone 25 feet
4. Engine exhaust 1500 feet.

APPROACH TO ENTRY POINT (Engines running 80%+)

1. Approach from right side, aft of wings avoiding the propellers for a ten-foot radius.

PRE-DESIGNATED RESCUERMAN ACTIONS

1. GAIN ENTRY
 - a. **Normal entry –**
 - I. MAIN PASSENGER CABIN: Rotate handle on door, located on right side of fuselage, aft of the wing, counterclockwise. Swing door forward.
 - II. COCKPIT: From a position on the right wing, press aft "bobbled" portion of handle to pop handle out. PULL handle aft and swing door forward.
 - b. **Cut-In –** Cut-in around large passenger windows on both sides. These are emergency exits that can only be opened from the inside.
2. ENGINE SHUTDOWN
 - a. Retard Prop, Throttle and Mixture Levers, located lower center portion of dash, to the full aft and off positions.
 - b. Turn two red fuel selectors, located on floor between pilots, to the OFF position. (On the right switch this will be to the 3:00 position and on the left switch to the 9:00 position.)
 - c. Press battery switch, located just above the left crewmember's knee, between two alternator switches, down to OFF. (It is OK to press the two alternator switches also.)
3. AIRCREW EXTRACTION
 - a. Unlatch lap belts on all crewmembers and passengers.

OTHER FACTORS

1. **Special tools/equipment:** Power rescue saw and crash axe.
2. Location of switches and equipment and emergency shutdown procedures may vary for individual aircraft. Crews should be briefed prior to aircraft dispatch.

COMMUNICATIONS PLAN: National Air Tanker frequency – 123.975. This is the frequency used by all air tanker bases, air tankers, air tanker support aircraft during fire fighting operations.

USFS AIRCRAFT

BOEING 727

AIRCRAFT PRE-FIRE PLAN

AIRCRAFT TYPE: Boeing 727

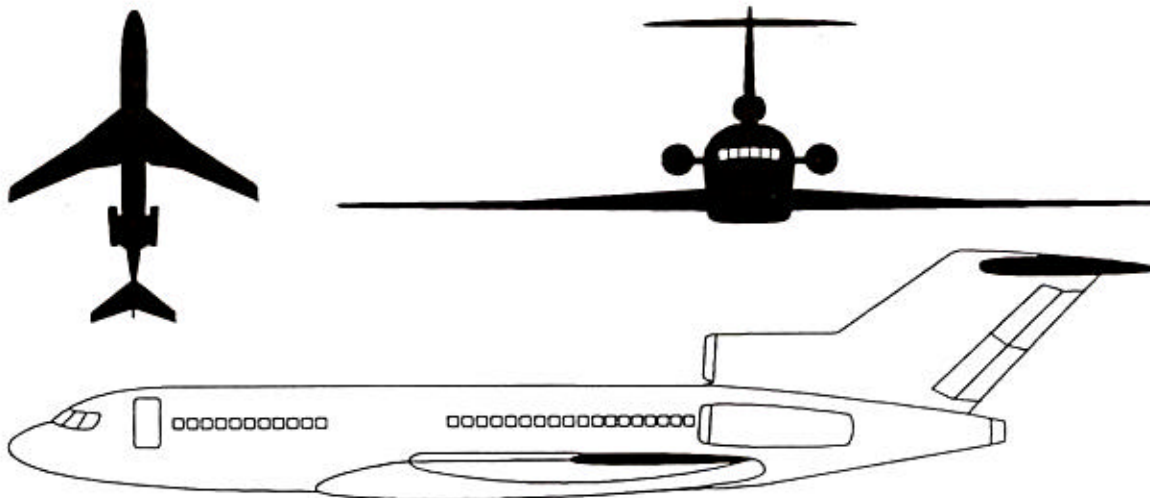
Reference: Boeing Rescue and Fire Fighting Info.

AIRCRAFT DESCRIPTION: The Boeing 727 is a large transport jet that may be contracted by natural resource agencies for passenger and cargo transportation. Updated versions can carry larger number of passengers.

Length (ft)	Wing Span (ft)	Turn Radius (ft)	Cruise Speed (kts/mpg)	Payload	Gross Weight (lbs.)	Contract Op. Wt. (lbs.)	Retardant Load (gallons)	Number of Pax Seats	ICS Type
133	108	72	417/480	23,000	161,000	n/a	n/a	128	n/a

NOTE:

For more information, refer to Chapter 18.



HAZARDS

1. 10330 gallons / 69211 pounds of jet fuel on-board (fully loaded), located in wings and fuselage.
2. Oxygen cylinders in various locations throughout aircraft.
3. Auxiliary Power Unit (APU) is located in main gear wheel well.
4. Battery located in electrical compartment below flight deck. APU battery located in same general area.
5. Avoid front of engines – ingestion hazard, rear of engine – high exhaust speeds.
6. Wheels are equipped with fusible plugs designed to melt and deflate the tire when the temperature is excessive. **WARNING!** Approach landing gear truck from forward or aft when fighting a wheel fire as wheels and tires may explode. Use of Halon is preferred if tires are pressurized, but dry chemical, fog or foam are acceptable. If all tires are deflated any fire-extinguishing agent may be used.

USFS AIRCRAFT

BOEING 727

APPROACH TO ENTRY POINT (Engines running 80%+)

1. Approach directly from the nose, avoiding the front on the engines

PRE-DESIGNATED RESCUERMAN ACTIONS

1. GAIN ENTRY

- a. **Normal entry – Pilot's Sliding Windows** = (NOTE: Right and left hand side of cargo aircraft, right hand side only on passenger planes.) Push in external access door, pull external release handle and slide window open. *Forward Entry Door External Handle* = Pull handle outward, rotate counter clockwise and pull door outward. *Mid/Forward Galley Door external* = Pull handle outward, rotate counter-clockwise and pull door outward. *Aft Exit Doors External Handle* = Pull outward lower end of handle and rotate forward. Pull door outward. **WARNING!** Passenger and service doors, chute may automatically deploy when doors are opened from the outside. *Aft Airstairs* = Aft entry door opens from inside of the aft airstairs area. Airstairs must first be lowered. The aft airstair exterior control panel, located left hand side of aircraft under engine on fuselage, has operating instructions on access panel.
- b. **Emergency entry – Emergency Overwing Exit Hatches Push Panel** = Push in panel, push hatch inward and upward.
- c. **Cut-in** – Cut-in areas are located on each side of fuselage, near top, over aft exit doors, and are not marked. Cut-in can also be accomplished around over wing hatches and entry doors. Cut-in areas require metal cutting portable power equipment. Because of type of structure and possible injury to personnel within, it is recommended that major effort to gain access be directed to hatches and doors. Urgency of situation will dictate necessity for cut-in.
NOTE: When the aircraft is resting on it's wheels, it is 9 feet, 1 inches to floor level. When the landing gear is retracted, it is 5 feet 8 inches to floor level.

2. ENGINE SHUTDOWN

- a. Retard engine thrust levers, located on center console, to the full aft position.
- b. Retard engine start levers, located on center console, to the CUTOFF position.
- c. Pull fire emergency shut-down T-handles, located on center console, to the aft position.
- d. Pull APU fire switch – if APU fire.
- e. Place Master Switch, located on the bulkhead right of Flight Engineers console to the OFF position.
- f. Lift guard and place battery switch, located on the rear of the overhead Flight Engineers console, to the OFF position.

3. AIRCREW EXTRACTION

- a. Unlatch lap belt and remove shoulder harness from crewmember(s). If seat track is not damaged during crash landing, use adjustable seat control to move seat in aft position when removing crewmembers. Passenger seats do not have shoulder harness.

OTHER FACTORS

1. **Special tools/equipment:** Power rescue saw, 24-foot extension ladder.
2. Location of switches and equipment and emergency shutdown procedures may vary for individual aircraft. Crews should be briefed before aircraft dispatch.

COMMUNICATIONS PLAN: National Air Tanker Frequency – 123.975. This is the frequency used by all air tanker bases, air tankers, and air tanker support aircraft during fire fighting operations.

USFS AIRCRAFT

BOEING 737

AIRCRAFT PRE-FIRE PLAN

AIRCRAFT TYPE: Boeing 737

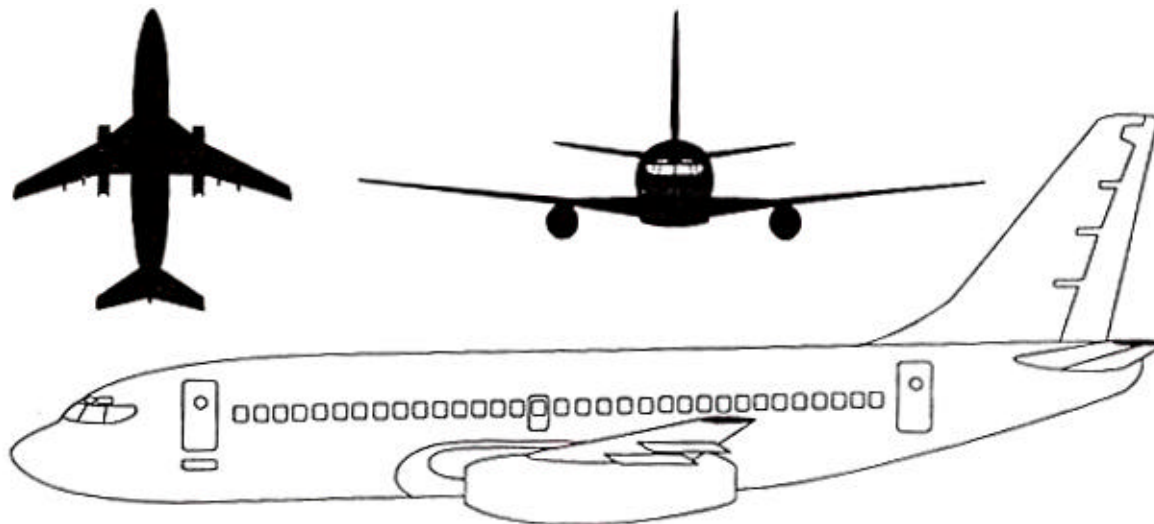
Reference: Boeing Rescue and Fire Fighting Info.

AIRCRAFT DESCRIPTION: The Boeing 737 is a large transport jet that may be contracted by natural resource agencies for passenger and cargo transportation. Updated versions can carry larger numbers of passengers.

Length (ft)	Wing Span (ft)	Turn Radius (ft)	Cruise Speed (kts/mpg)	Payload	Range (St miles.)	Contract Op. Wt. (lbs.)	Retardant Load (gallons)	Number of Pax Seats	ICS Type
100	93	58	417/480	15,000	n/a	n/a	n/a	81	n/a

NOTE:

For more information, refer to Chapter 18.



USFS AIRCRAFT

BOEING 737

HAZARDS

1. 6875 gallons / 46062 pounds of jet fuel on-board (fully loaded), located in wings and fuselage of the -200 and -800. The Business Jet version, with auxiliary tanks, can carry up to 10,725 gallons.
2. Oxygen cylinders in various locations throughout aircraft.
3. Battery located in electrical compartment below flight deck.
4. Avoid front of engines – ingestion hazard, rear of engine – high exhaust speeds.
5. Wheels are equipped with fusible plugs designed to melt and deflate the tire when the temperature is excessive. **WARNING!** Approach landing gear truck from forward or aft when fighting a wheel fire as wheels and tires may explode.

APPROACH TO ENTRY POINT (Engines running 80%+)

1. Approach directly from the nose, avoiding the front on the engines

PRE-DESIGNATED RESCUERMAN ACTIONS

1. GAIN ENTRY
 - a. **Normal entry** – *Pilot's Sliding Windows* = Push in external access door, pull external release handle and slide window open. *Forward and Aft Entry Door External Handle (Left Hand Side)* = Pull handle outward, rotate clockwise and pull door outward. *Forward and Aft Service Door external Handle (Right Hand Side)* = Pull handle outward, rotate counter-clockwise and pull door outward. **WARNING!** Passenger and service doors, chute may automatically deploy when doors are opened from the outside.
 - b. **Emergency entry** – *Emergency Overwing Exit Hatches Push Panel* = Push in panel, push hatch inward and upward.
 - c. **Cut-in** – Cut-in areas are located on each side of fuselage, near top, forward of wing and aft of wing, and are not marked.
NOTE: When the aircraft is resting on it's wheels, it is 8 feet, 6 inches to floor level. When the landing gear is retracted, it is 5 feet to floor level.
2. ENGINE SHUTDOWN
 - a. Retard engine thrust levers, located on center console, to the full aft position.
 - b. Retard engine start levers, located on center console, to the CUTOFF position.
 - c. Pull fire emergency shutdown T-handles, located on center console, to the aft position. If not illuminated, push and hold the button under the switch to release.
 - d. Place APU Master Switch, located on the overhead center console to the OFF position.
 - e. Lift guard and place battery switch, located on the rear of the overhead center console, to the OFF position.
3. AIRCREW EXTRACTION
 - a. Unlatch lap belt and remove shoulder harness from crewmember(s). If seat track is not damaged during crash landing, use adjustable seat control to move seat in aft position when removing crewmembers. Passenger seats do not have shoulder harness.

OTHER FACTORS

1. **Special tools/equipment:** Power rescue saw, 24-foot extension ladder.
2. Location of switches and equipment and emergency shutdown procedures may vary for individual aircraft. Crews should be briefed before aircraft dispatch.

COMMUNICATIONS PLAN: National Air Tanker frequency – 123.975. All air tanker bases, air tankers, and support aircraft use this frequency during fire fighting operations.

USFS AIRCRAFT**SPECIAL TOOLS/EQUIPMENT**

Power Rescue Saw
Fire Drill II

NOTE:

The KC-97 was originally designed for the military to serve in roles such as airborne refueler and personnel/cargo transport aircraft before its civilian conversion to an airtanker. The KC-97 can be identified by the round glass cockpit nose area, square windows, mid wing, four engines and four-blade propeller.

(K)C-97**AIRCRAFT ENTRY-ALL MODELS****1. NORMAL ENTRY**

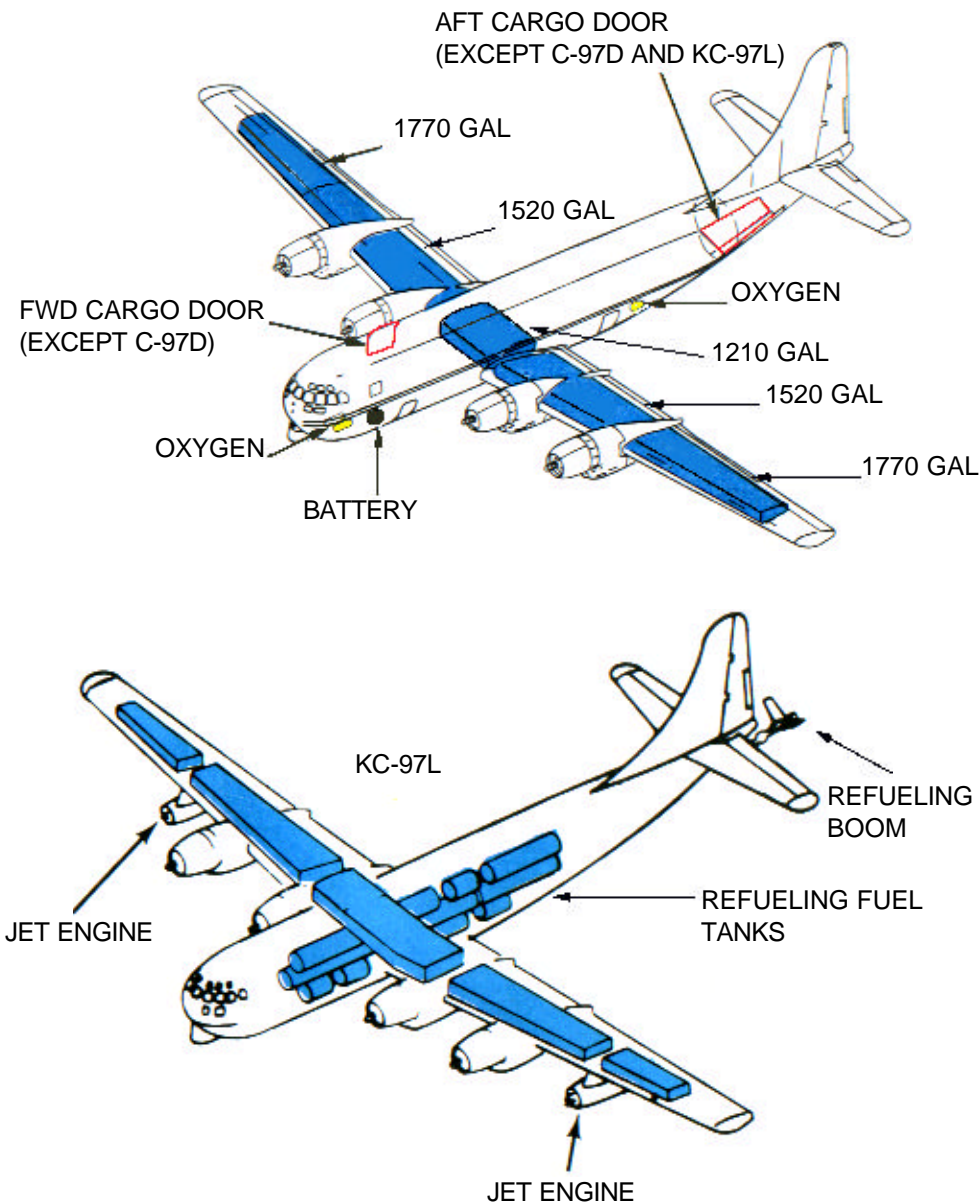
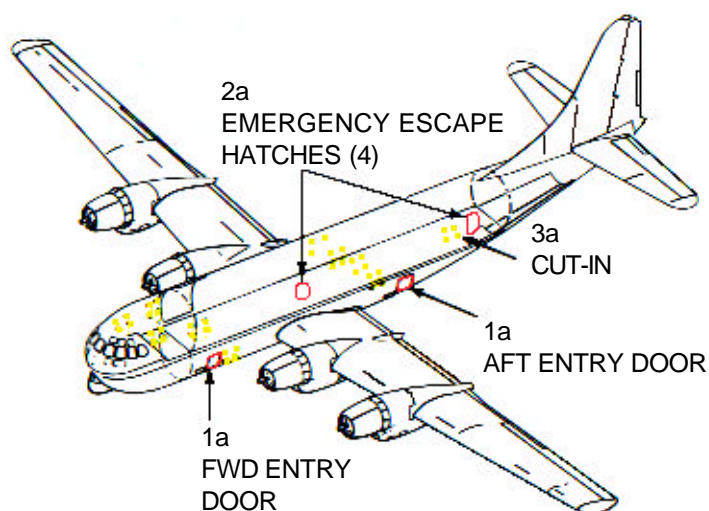
- a. Push in on flush type door and squeeze trigger to release door outward. Entry doors are located forward and aft on left side of fuselage.

2. EMERGENCY ENTRY

- a. Pull emergency escape hatch release handles, located over wing and forward of rear cargo door on each side of aircraft.
- b. Push in escape hatches. Total hatches: four.

3. CUT-IN

- a. Cut in areas as marked on fuselage.

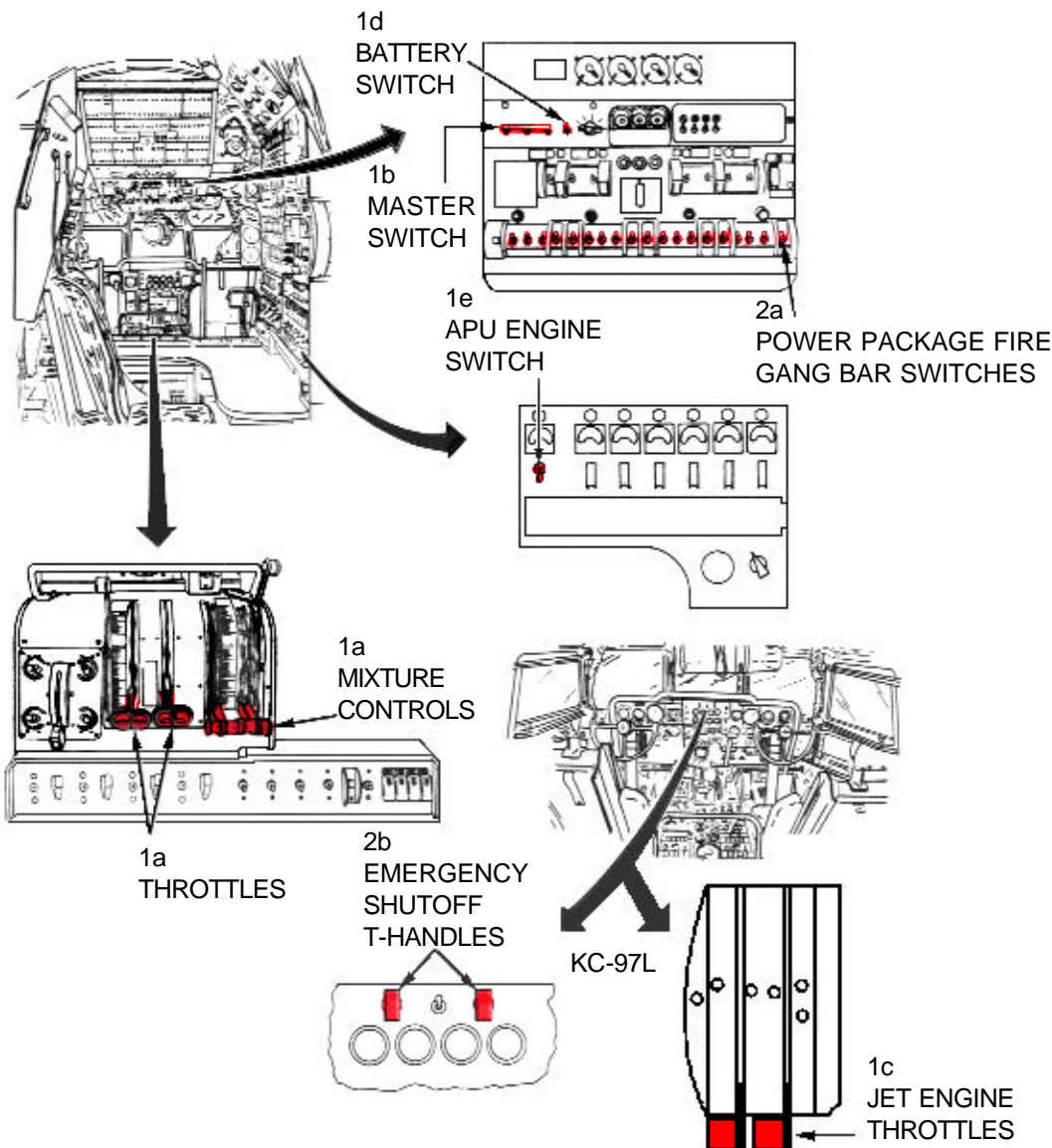


USFS AIRCRAFT

(K)C-97

1. NORMAL SHUTDOWN

- Retard throttles and mixture control lever, located on the center control panel, to the CLOSED (aft) position.
- Place master switch, located on left side of engineer's overhead panel, to the OFF position.
- For KC-97L aircraft with engines, retard jet engine throttle aft to OFF position.
- Place battery switch, located on right side of master switch, to the OFF position.
- Place APU engine switch, located on the APU control panel, to the OFF position.



2. EMERGENCY SHUTDOWN

- Pull power package fire gang bar switches (six places), located on the overhead panel, to the downward position.
- On L model, pull emergency shutoff T-handles, located on top and center on pilot's instrument panel.

3. AIRCREW EXTRACTION

- Release lap belts and remove shoulder harness from crewmembers.

NOTE:

If seat tracks are not damaged during crash landing, use adjustable seat control handle to retract seat to aft position.

- If passenger seats are installed, only lap belts are installed.

USFS AIRCRAFT

C-130 HERCULES

AIRCRAFT PRE-FIRE PLAN

AIRCRAFT TYPE: C-130 Hercules

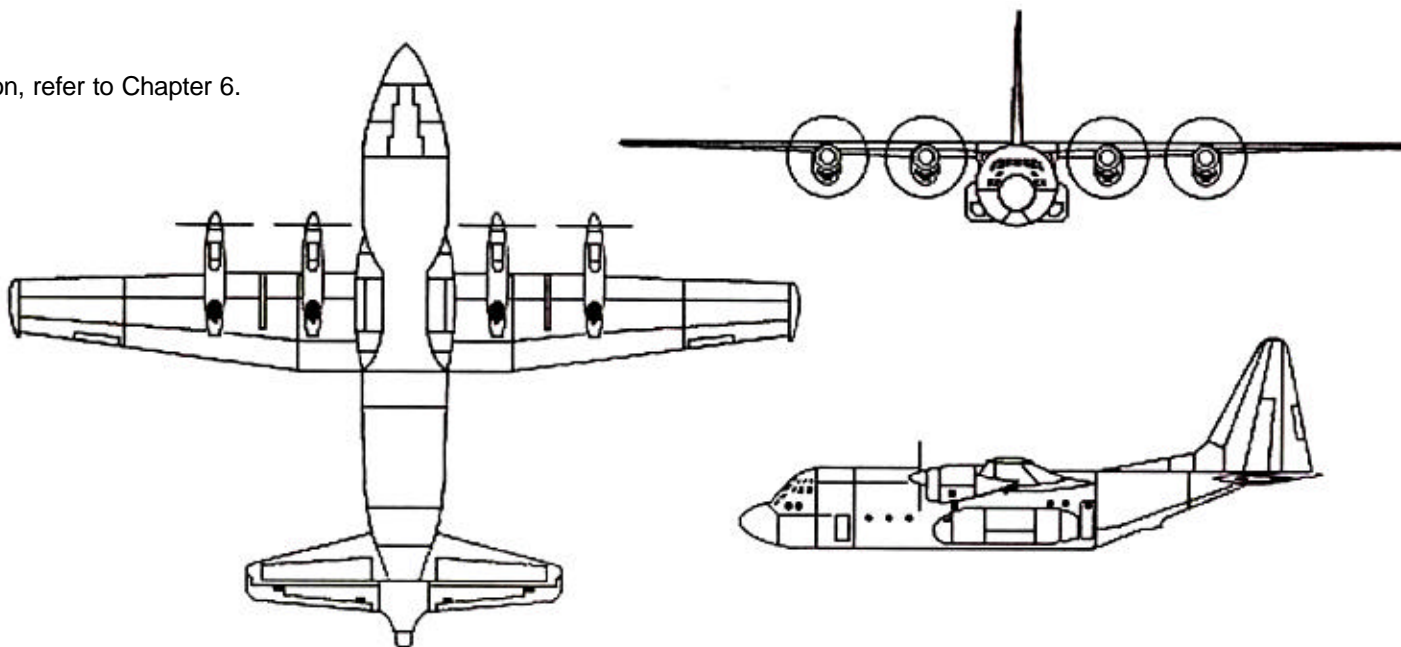
Reference: USAF Technical Order 00-105E-9

AIRCRAFT DESCRIPTION: The C-130 is a military transport with four turboprop engines. As an airtanker it has two applications - conventional and MAFFS. Conventional operations have installed gated and variable flow bottom discharging tank systems. MAFFS or Modular Airborne Fire Fighting System temporarily converts military C-130s to airtankers. They have been used since the early 1970's but only when civilian airtankers are overburdened. The system slides in the back and two large pipes hang behind the open cargo door. Pressurized air forces retardant out the pipes. MAFFS coverage levels are very light and once a drop is started the entire load is released. Two MAFFS systems are designed to be incremental, but have had limited success. A leadplane is always required with MAFFS as military pilots do not possess airtanker qualifications, but do train with leadplane pilots annually. The C-130 can be identified by the four-turbo prop engines with four blade propellers, high wing, rear door below the tail section and in-line main dual landing gear wheels.

Class	Length (ft)	Wing Span (ft)	Turn Radius (ft)	Cruise Speed (kts/mpH)	Gross Weight (lbs)	Range Loaded (St miles.)	Contract Op. Wt. (lbs.)	Retardant Load (gallons)	Number Gates	ICS Type
Conv.	99	133	80	239/275	124,200	1500	108,553	3000	1 to 8	1
MAFFS	99	133	80	239/275	156,000	1500	105,553	3000	1	1

NOTE:

For more information, refer to Chapter 6.



USFS AIRCRAFT

C-130 HERCULES

HAZARDS

1. Up to 12,500 gallons / 83750 pounds of jet fuel on-board (fully loaded), located in wings and fuselage.
2. 13 oxygen cylinders in front half of fuselage – various locations. The civilian version will have 1 to 3 bottles in various locations. (Forward bulk head, aft side or under flight deck.)
3. Battery located in left side of nose.
4. Propeller danger zone 10 feet. Arc can be 4 to 6 feet from the ground.
5. Turbine blade failure – 300 feet to the side.
6. Propeller blast and engine exhaust. (69 knots 500 feet aft of propellers, 800 degrees 4 feet aft, 100 degrees 100 feet aft.)
7. GTC exhaust area, left side mid-fuselage, forward of left wheel well. Temperatures can exceed 1000 degrees.
8. Hydraulic system pressurized to 3000 psi.
9. Engine oil – 48 gallons
10. Hydraulic fluid 25.59 gallons. Located inside in two containers, one on each side of fuselage in front of wheel well area.
11. Shrouds on wheel wells keep heat from brakes inside. This can cause tires / wheels to explode.
12. Aircraft engines will drip fuel when they are shutdown.
13. Avionics bay is located under flight deck. Access by removing ladder to flight deck. Oxygen may be in this area.
14. Absence of fire stops in cargo bay floor and walls can cause fuel and fire to spread undetected.

APPROACH TO ENTRY POINT (Engines running 80%+)

1. Approach directly from the nose, avoiding the propellers for a ten-foot radius.

PRE-DESIGNATED RESCUERMAN ACTIONS

1. GAIN ENTRY

WARNING! Forward hatch, left side of fuselage, is in close proximity of right side turbo propeller. Avoid if propeller / engine is running. This hazard could cause loss of life! Not for entry or crew extraction until engine is shutdown. Same for left side if applicable model in use.

 - a. **Normal entry** – Rotate crew entry door handle, located forward left side of fuselage, counterclockwise and open door outward and down. **WARNING:** If aircraft is still pressurized, door may explode outward. Rotate troop door handle, located aft on both sides of fuselage, clockwise and push door inward and up until locked in open position. **NOTE:** The retardant tanks can block access to the forward areas of the aircraft.
 - b. **Emergency entry** – Pull release handle and push inward on four hatches located forward, center, and aft top of fuselage, and fuselage forward right side.
 - c. **Cut-in** – Cut-in areas are located on each side of fuselage, above and forward of each troop door.
2. ENGINE SHUTDOWN

WARNING! To avoid the hazards in approaching running aircraft, enter through rear troop doors. **NOTE:** DO NOT remove battery power before activating emergency T-handles.

 - a. Position condition levers, located on control pedestal between forward crew seats, aft to FEATHER position. Open safety guard of bus-tie switch (on military version). Turn switch to OFF position. Bus-Tie is located on overhead panel above pilot's right seat armrest.
 - b. Pull fire emergency shutdown T-handles, located on overhead panel, to the aft position.
 - c. If APU / GTC is operating, pull GTC T-handle.
 - d. Disconnect battery, located forward of crew entrance door or turn off battery switch, located on overhead control panel, to OFF position.
3. AIRCREW EXTRACTION
 - a. Unlatch lap belt and remove shoulder harness from crewmember(s). If seat track is not damaged during crash landing, use adjustable seat control to move seat in aft position when removing crewmembers. Passenger seats do not have shoulder harness.

USFS AIRCRAFT

C-130 HERCULES

OTHER FACTORS

1. **Special tools/equipment:** Power rescue saw and 12 foot ladder.
2. Skin penetration points – 2 on right side and one on left side of each engine.
3. Location of switches and equipment and emergency shutdown procedures may vary for individual aircraft. Crews should be briefed before aircraft dispatch.
4. Can land with two engines out.

COMMUNICATIONS PLAN: National Air Tanker Base Frequency – 123.975. All air tanker bases, air tankers and air tanker support aircraft monitor this frequency during fire fighting operations.

AIRTANKER CALL-SIGNS: MAFFS 1 through MAFFS 8, 30, 31, 32, 63, 64, 67, 81, 83, 88, 130, 131, 133.

USFS AIRCRAFT

CASA C-212 AVIOCAR

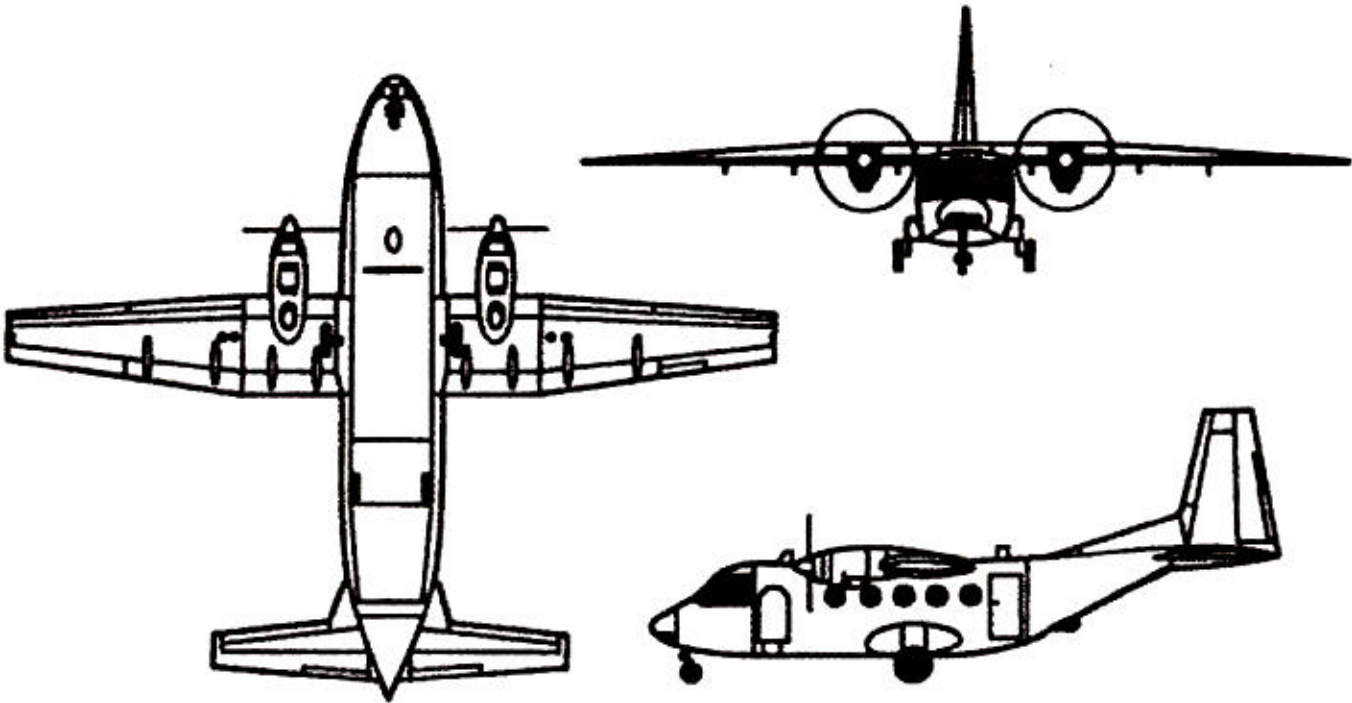
AIRCRAFT PRE-FIRE PLAN

AIRCRAFT TYPE: CASA C-212 Aviocar Reference: Technical Order 00-105E-9

AIRCRAFT DESCRIPTION: The CASA Company has been designing and building aircraft for the Spanish military since 1923. The C-212 was designed in the late 1970's as a commuter airliner to carry up to 26 passengers. The CASA has been used extensively in Alaska for smokejumping, paracargo, and passenger and cargo transport. They are rarely seen in the lower 48 states except during high activity fire years. The CASA is a turbine powered, fixed gear aircraft. The interior is very roomy, and can carry a respectable cargo load. It is a good solid aircraft and is very maneuverable.

Length (ft)	Wing Span (ft)	Turn Radius (ft)	Cruise Speed (kts/mpg)	Payload	Range (St miles.)	Contract Op. Wt. (lbs.)	Retardant Load (gallons)	Number of Pax Seats	Number of Jumpers
50	62	n/a	169/195	3400	n/a	n/a	n/a	19	10

NOTE:
For more information, refer to Chapter 6.



USFS AIRCRAFT

CASA C-212 AVIOCAR

HAZARDS

1. 792 gallons / 5306.4 pounds of jet fuel on-board (fully loaded), located in wings.
2. 1 oxygen cylinder located aft of cockpit.
3. One battery located in right wheel well.
4. Propeller danger zone 25 feet
5. Turbine blade failure 300 feet.
6. Engine exhaust 1500 feet.

APPROACH TO ENTRY POINT (Engines running 80%+)

1. Approach directly from the nose or to the aft of the wing on the left hand side, avoiding the propellers for a ten-foot radius.

PRE-DESIGNATED RESCUERMAN ACTIONS

1. GAIN ENTRY
 - a. **Normal entry –**
 - I. One passenger access door is located in the rear left hand side of the main cabin. It opens inward and to the rear.
 - II. Two crew access doors are symmetrically located in the front of the main cabin. They open outward and forward.
 - b. **Emergency entry –**
 - I. One emergency door is located in the rear right hand of main cabin.
 - II. One roof escape hatch is located in the front fuselage.
 - III. Two rear side windows located at front of fuselage are of the sliding type to be used as an emergency exit for the pilots.
 - IV. Rear cargo door, which opens inward, is hydraulically operated. If hydraulic system is inoperative, do not try to operate cargo door during rescue procedures.
2. ENGINE SHUTDOWN
 - a. Retard feathering levers, located on overhead console, aft to the shut-off position.
 - b. Switch engine shutdown switches, located on overhead console, to the OFF position.
 - c. Switch master switch, located on overhead console, to the OFF position.
 - d. If engine fire has been detected (see WARNING light), activate Fire Extinguishing System. There are two discharge switches for each engine.
3. AIRCREW EXTRACTION
 - a. Aircrew seats are equipped with shoulder harnesses and lap belts.
 - b. Troop seats are fitted with safety belts only.

OTHER FACTORS

1. **Special tools/equipment:** 12-foot ladder, power rescue saw and crash axe.
2. Location of switches and equipment and emergency shutdown procedures may vary for individual aircraft. Crews should be briefed prior to aircraft dispatch.

COMMUNICATIONS PLAN: National Air Tanker frequency – 123.975. This is the frequency used by all air tanker bases, air tankers, air tanker support aircraft during fire fighting operations.

USFS AIRCRAFT

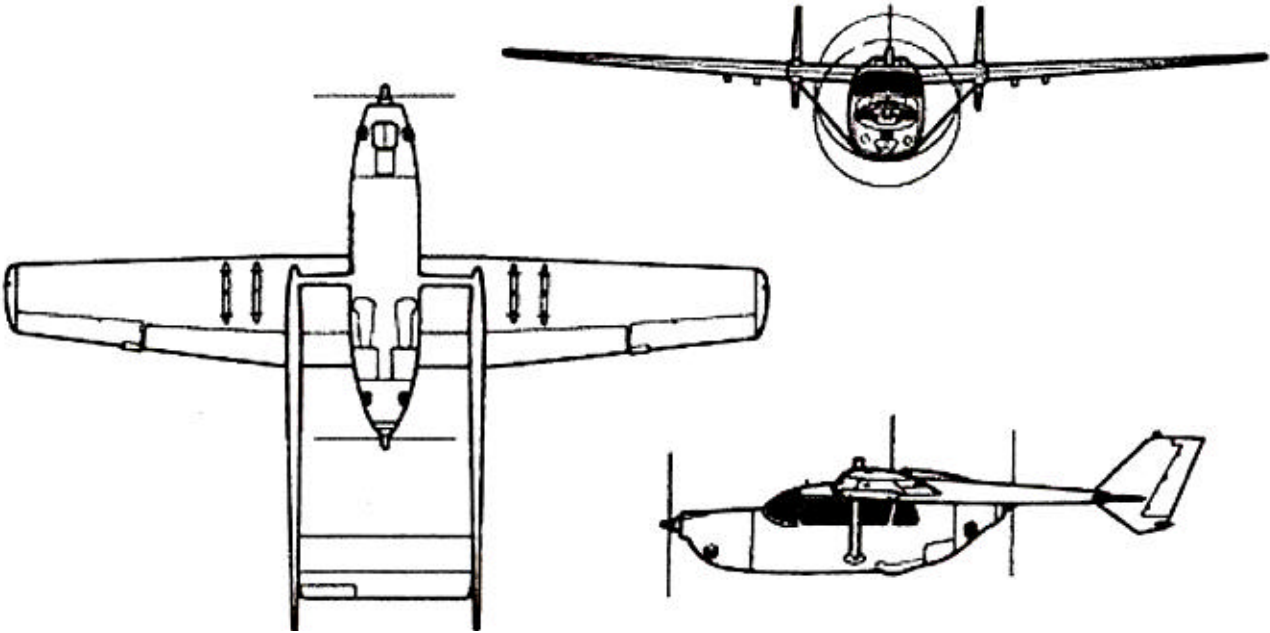
CESSNA 337SKYMASTER/O-2

AIRCRAFT PRE-FIRE PLAN

AIRCRAFT TYPE: Cessna 337Skymaster/O-2 Reference: CDF Info. & TO 00-105E-9

AIRCRAFT DESCRIPTION: The Cessna 337/O-2 is a fairly common aircraft. The aircraft was originally used by the USAF as a forward air control (FAC) aircraft in Vietnam. Two engines one in front and one in back, make it very reliable. They are often used for recon and air tactical operations.

Length (ft)	Wing Span (ft)	Turn Radius (ft)	Cruise Speed (kts/mpg)	Payload	Range (St miles.)	Contract Op. Wt. (lbs.)	Retardant Load (gallons)	Number of Pax Seats	ICS Type
30	38	n/a	148/170	600	n/a	n/a	n/a	3	n/a



USFS AIRCRAFT

CESSNA 337SKYMASTER/O-2

HAZARDS

1. 122 gallons / 817.4 pounds of av-gas on-board (fully loaded), located in wings.
2. 10 oxygen cylinders in various locations. (3 fixed and 7 portable cylinders)
3. One battery located aft area of passenger compartment.
4. Propeller danger zone 25 feet
5. Engine exhaust 1500 feet.
6. Engine Oil – 2.5 gallons
7. Hydraulic fluid - .75 gallons.

APPROACH TO ENTRY POINT (Engines running 80%+)

1. Approach directly from the side, avoiding the propellers for a ten-foot radius.

PRE-DESIGNATED RESCUERMAN ACTIONS

1. GAIN ENTRY
 - a. **Normal entry** – Rotate cabin door exterior handle, located right fuselage door, counterclockwise, open door outward.
NOTE: Entry can only be made from right side of fuselage.
 - b. **Emergency entry** –
 - I. Rotate external door handle; if locked, break window and unlock door, rotate door jettison handle located right forward of door frames, up and aft to remove door. NOTE: On aircraft with recessed door handles, door must be unlocked from inside before door can be removed.
 - II. Open exterior access door, located forward left fuselage under pilot's window, pull handle to release window. NOTE: To jettison pilot's exterior access window, break window, remove plastic plate just behind pilot's seat, pull handle forward, and pull window assembly down (O-2B and early A models).
 - c. **Cut-in / Forcible Entry** – Cut cabin enclosure as required.
2. ENGINE SHUTDOWN
 - a. Retard mixture control levers, located center engine control pedestal, to the aft and CLOSED position.
 - b. Turn fuel selector switches, located top right side of cabin, to OFF position.
 - c. Place magneto switches, located lower left corner instrument panel, to downward / OFF position.
 - d. Place battery / master switch, located lower left corner of instrument panel, to downward / OFF position.
3. AIRCREW EXTRACTION
 - a. Pull upward on seat travel adjusting lever, slide seats aft to facilitate removal of crewmembers.
 - b. Unlatch lap belt, remove shoulder harness, and remove crewmember.

OTHER FACTORS

1. **Special tools/equipment:** Power rescue saw and crash axe.
2. Locations of switches and equipment and emergency shutdown procedures may vary for individual aircraft. Crews should be briefed prior to aircraft dispatch.

COMMUNICATIONS PLAN: National Air Tanker frequency – 123.975. This is the frequency used by all air tanker bases, air tankers, air tanker support aircraft during fire fighting operations.

USFS AIRCRAFT

CH-46 SEA KNIGHT/VERTOL 107

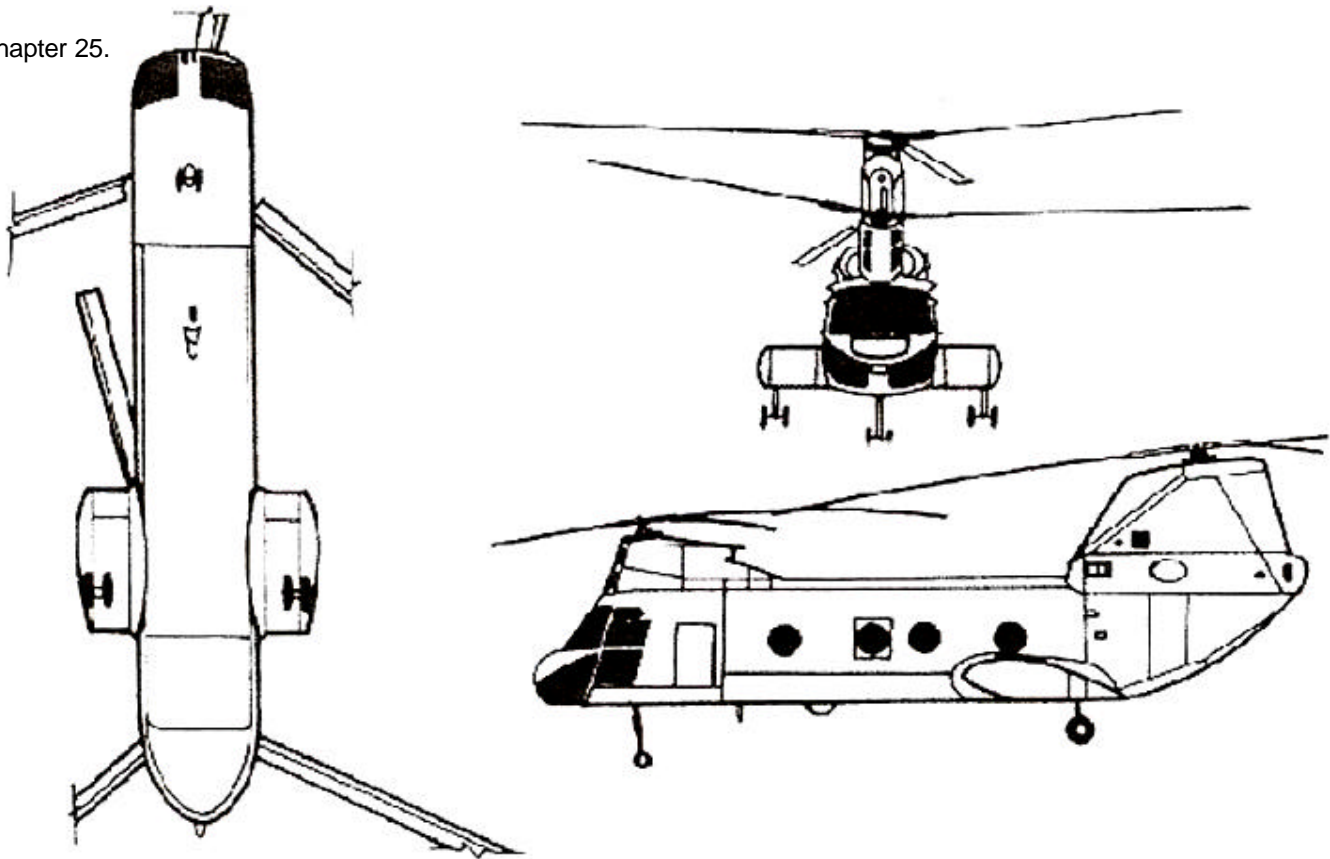
AIRCRAFT PRE-FIRE PLAN

AIRCRAFT TYPE: CH-46 Sea Knight (Boeing Vertol 107) Reference: NAVAIR 00-80R-14-1

AIRCRAFT DESCRIPTION: The CH-46 was designed in the early 1960's for the US Marine Corps as an assault aircraft. The original design was amphibious. Contract CH-46 will not float because they have been stripped down for weight reduction. It has tandem motors, is turbine powered, and requires a crew of two. It is smaller and not as complex as the Chinook and is less costly to operate.

Length (ft)	Rotor Dia. (ft)	Turn Radius (ft)	Cruise Speed (kts/mpg)	1.5 Hour Fuel Load (gals)	Bucket Size (gals)	Fixed Wt. Reduction (lbs)	Fuel Consumption (gals/hrs)	Typical Equip. Wt. (lbs)	Number of Pax Seats	ICS Type
84' 4"	51	n/a	120/138	247	900-1000	n/a	165	11,000	25	1

NOTE:
For more information, refer to Chapter 25.



USFS AIRCRAFT

CH-46 SEA KNIGHT/VERTOL 107

HAZARDS

1. Standard fuel load of 660 gallons / 4488 pounds of jet fuel on-board (fully loaded), located in fuselage. An additional three tanks of 235 gallons / 1574 pounds of jet fuel each may be carried inside cabin.
2. 2 oxygen cylinders can be located in the cockpit. Some aircraft may not carry oxygen tanks.
3. One battery located in left main landing gear well.
4. Inlet suction danger area is 4 feet.
5. Turbine blade failure
6. Engine exhaust – 12 feet.
7. APU exhaust – 12 feet.
8. Rotor minimum ground clearance – Main = 9 feet 11 inches. Tail = 14 feet 10 inches. (The main rotor disc diameter is 84 feet 4 inches and the tail rotor disc diameter is 51 feet.)
9. Hydraulic system may be pressurized to 3500 psi.
10. Engine Oil – 5.5 gallons
11. Hydraulic fluid – 5.77 gallons.
12. Transmission fluid – 9.8 gallons, plus approximately 2 additional gallons in lines and cooler.

APPROACH TO ENTRY POINT (Engines running 80%+)

1. Approach directly from the side, exercising extreme caution around rotors, which can dip to within four feet of the ground.

PRE-DESIGNATED RESCUERMAN ACTIONS

1. GAIN ENTRY
 - a. **Normal entry** – Normal entry is through main cabin door on the right hand side. The door has an upper and lower door, which operate separately. To open the upper portion, PUSH handle to expose, TURN HANDLE CLOCKWISE, MOVE door INWARD slightly and ROLL UP until the uplock is engaged. The lower door opens out and down. To open, PUSH handle, TURN handle COUNTERCLOCKWISE and pull door OUT and DOWN.
 - b. **Emergency entry** – Emergency entrance may be gained through pilot/copilot jettisonable windows, three fuselage windows, the emergency access hatch, and the cargo ramp/hatch.
 - I. To open pilot/copilot's jettisonable window PUSH handle, TURN handle CLOCKWISE and PULL.
 - II. Three windows, two on the right hand side and one on the left hand side. (May be marked RESCUE.) To open, PULL tape OUT (upper left-hand corner of window), and PUSH panel INWARD.
 - III. To open the Emergency Access Hatch (left hand side of the "E" model and may be marked RESCUE), PULL tape OUT and Push panel Inward.
 - IV. The Cargo Ramp/Hatch Controls are located on the right hand side, above stub wing (rear). To access controls PUSH button on access door. The system consists of three control levers. With hydraulic pressure, actuate both ramp and hatch by PUSHING Ramp Control Handle and Cargo Hatch Control Handle AFT. Without hydraulic pressure, only ramp will operate. To lower ramp, PUSH Ramp Control Handle AFT then PUSH Ramp Auxiliary Control Handle AFT.
 - c. **Forcible Entry/Cut-in** – Windows are made of acrylic plastic and may be cut or broken. Areas marked on fuselage CUT HERE also may be cut out. CUT along window frames and marked fuselage only.
2. ENGINE SHUTDOWN
 - a. PULL Condition levers, located center console between crewmembers, fully AFT to STOP position. PLACE Power Off Switch in OFF position. PLACE Power Control Master Switch in OFF position. PLACE APU Switch in STOP position. Deactivate electrical system by PLACING Battery Switch in the OFF position. (All switches located on Electrical Control Panel, located in the overhead console.) NOTE: Fire handles may be pulled to secure fuel and oil to engines.
3. AIRCREW EXTRACTION
 - a. The pilot and copilot are attached to the seats by shoulder harnesses secured to lap belts with quick disconnect buckles. Passengers and crewmembers have lap belts only.
 - I. For Pilot and Copilot, LIFT quick disconnect lever to release shoulder harnesses and lap belt.
 - II. For passengers, LIFT buckle cover to release lap belt (airline type).

OTHER FACTORS

1. **Special tools/equipment:** Power rescue saw and crash axe.
2. Location of switches and equipment and emergency shutdown procedures may vary for individual aircraft. Crews should be briefed prior to helicopter dispatch.

COMMUNICATIONS PLAN: National Air Tanker Frequency – 123.975. This is the frequency used by all air tanker bases, air tankers, and air tanker support aircraft during fire fighting operations.

USFS AIRCRAFT

NOTE:

LOCATION OF SWITCHES AND EQUIPMENT AND EMERGENCY SHUTDOWN PROCEDURES MAY VARY FOR INDIVIDUAL AIRCRAFT. CREWS SHOULD BE BRIEFED PRIOR TO HELICOPTER DISPATCH.

NOTE:

THE FOLLOWING PROCEDURES WILL BE FOLLOWED IN THE EVENT OF FIRE OR OTHER EMERGENCY DURING HOT REFUELING:

1. HOT REFUELING EMERGENCY

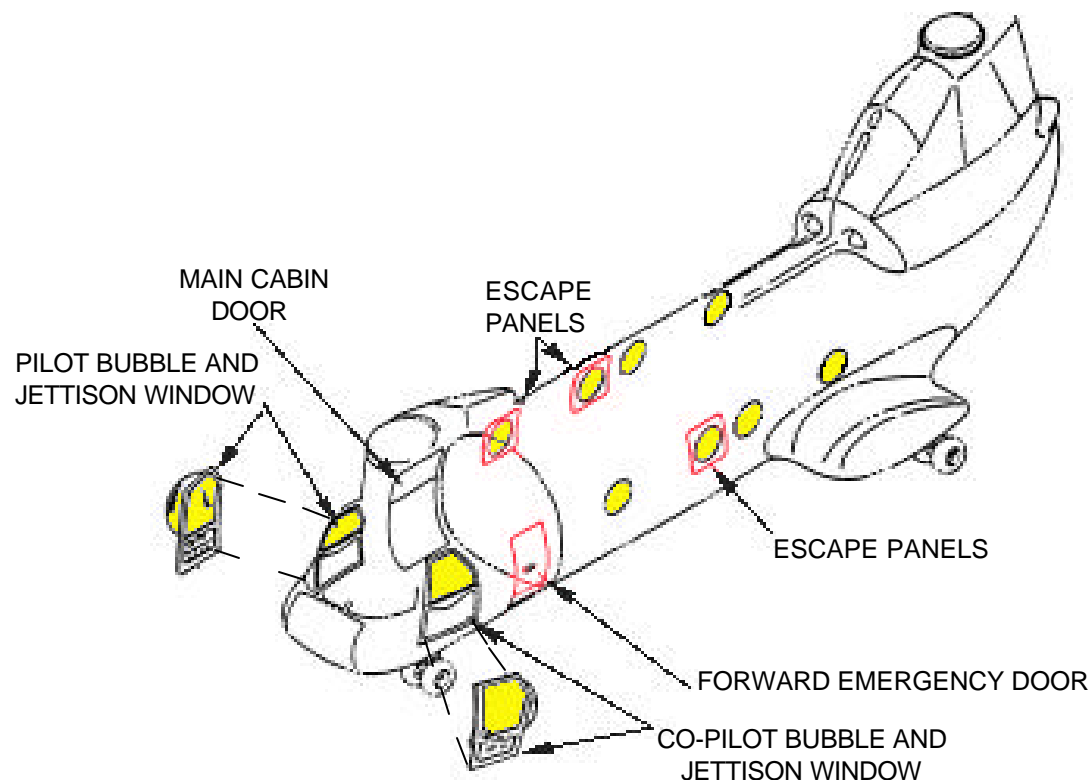
- a. Close fuel valves.
- b. Turn off boost pumps.
- c. Place engine condition levers (ECLs) in the STOP position.
- d. Jettison pilot and Co-pilot emergency doors/windows (bubbles).

NOTE:

Consider location of fire due to location of refueling point before jettisoning cockpit doors.

- e. Evacuate aircraft.
- f. Direct fire extinguisher on the fire.

CH-46 SEA KNIGHT/VERTOL 107



USFS AIRCRAFT

CH-47 CHINOOK

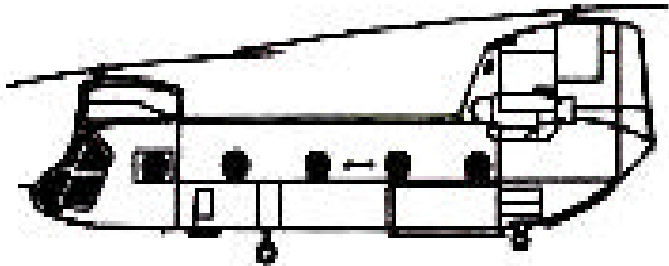
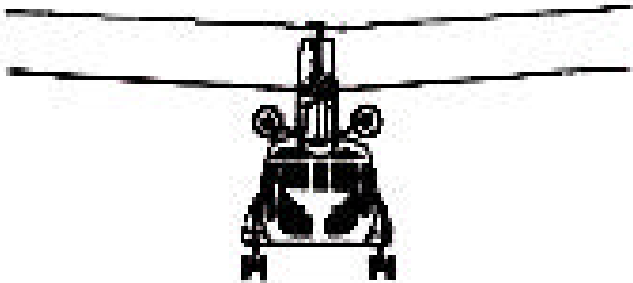
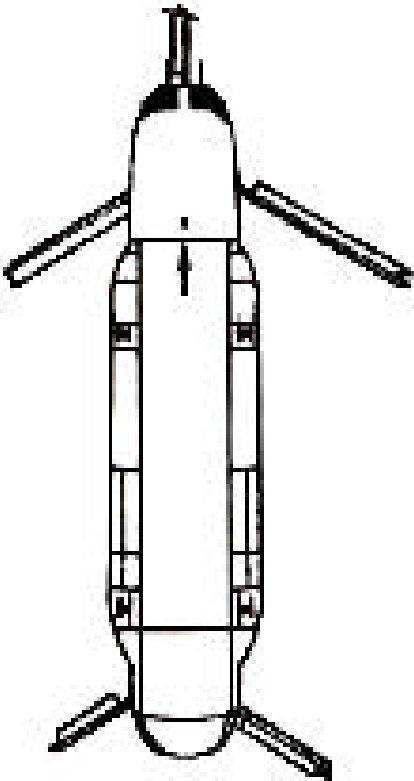
AIRCRAFT PRE-FIRE PLAN

AIRCRAFT TYPE: CH-47 Chinook (Boeing Vertol 234) Reference: T.O. 00-105E-9

AIRCRAFT DESCRIPTION: The CH-47 requires a crew of two. It has two rotors in tandem, no tail rotor, and turbine engines. It was designed for the Army in the late 1950's as an all weather transport and heavy lift. It evolved from the smaller piston driven Flying Banana that had wooden rotor blades. It was extensively used in Vietnam. The rotors, rotating in opposite directions, make it very stable and maneuverable, and there is no loss of control in crosswinds or tailwinds. They are expensive to operate but have a large bucket capacity and can make quick turnarounds.

Length (ft)	Rotor Dia. (ft)	Turn Radius (ft)	Cruise Speed (kts/mpg)	1.5 Hour Fuel Load (gals)	Bucket Size (gals)	Fixed Wt. Reduction (lbs)	Fuel Consumption (gals/hrs)	Typical Equip. Wt. (lbs)	Number of Pax Seats	ICS Type
99	60	n/a	135/155	600	3000	n/a	400	24,000	46	1

NOTE:
For more information, refer to Chapter 13.



USFS AIRCRAFT

CH-47 CHINOOK

HAZARDS

1. 621 gallons / 4160.7 pounds of jet fuel on-board (fully loaded), located in wings and fuselage.
2. One battery located in left main landing gear well.
3. Inlet suction danger area is 4 feet.
4. Turbine blade failure
5. Engine exhaust – 12 feet.
6. APU exhaust – 12 feet.
7. Rotor minimum ground clearance – Main = 10 feet 11 inches. Tail = 15 feet 10 inches. (The main rotor disc diameter is 84 feet 4 inches and the tail rotor disc diameter is 51 feet.)
8. Pneumatic system pressurized to 3000 psi.

APPROACH TO ENTRY POINT (Engines running 80%+)

1. Approach directly from the side, exercising extreme caution around rotors, which can dip to within four feet of the ground.

PRE-DESIGNATED RESCUERMAN ACTIONS

1. **GAIN ENTRY**
 - a. **Normal entry** – NOTE: The pilot's and co-pilot's doors are jettisonable doors only. The cabin entrance door is a two-section door. The upper half of the door rolls up, the lower half swings out and down forming a step.
 - I. Rotate handle located on upper half of cabin door, roll door up.
 - II. Rotate handle, located on lower half of cabin door, pull door out and down.
 - b. **Emergency entry** –
 - I. Push trigger button in center of handle and rotate emergency release handle, located below and aft of pilot's and co-pilot's jettisonable doors, pull door out..
 - II. Pull emergency release tab in lower corner of escape hatches, located on upper cabin door, left forward of side of fuselage and cargo door out and push panels in.
 - III. NOTE: Sufficient hydraulic pressure must be available to actuate cargo ramp uplocks. When uplocks are released, cargo ramp will free fall slowly. Open ramp control access door, located aft right side of fuselage, near ramp, place ramp control lever to DOWN position.
 - c. **Forcible Entry/Cut-In** – Cut-in areas are in center of upper fuselage between windows on both sides.
2. **ENGINE SHUTDOWN**
 - a. Position engine condition levers, located on control pedestal or overhead switch panel to STOP.
 - b. Position fuel valve or pump switches, located on overhead switch panel, to CLOSE or OFF.
 - c. Position battery switch, located on overhead switch panel, to OFF.

NOTE: If engines fail to shutdown, pull fire pull fuel shutoff T-handles, located at top center of instrument panel, OUT.
3. **AIRCREW EXTRACTION**
 - a. Unlatch seat belts and remove shoulder harness from crewmember(s).

OTHER FACTORS

1. **Special tools/equipment:** Power rescue saw and crash axe.
2. Location of switches and equipment and emergency procedures may vary for individual aircraft. Crews should be briefed prior to helicopter dispatch.

COMMUNICATIONS PLAN: National Air Tanker Frequency – 123.975. This is the frequency used by all air tanker bases, air tankers, and air tanker support aircraft during fire fighting operations.

USFS AIRCRAFT

NOTE:

LOCATION OF SWITCHES AND EQUIPMENT AND EMERGENCY SHUTDOWN PROCEDURES MAY VARY FOR INDIVIDUAL AIRCRAFT. CREWS SHOULD BE BRIEFED PRIOR TO HELICOPTER DISPATCH.

TYPE: Twin Turbine Engine Tandem Motor

CREW: Normal Conditions - 4

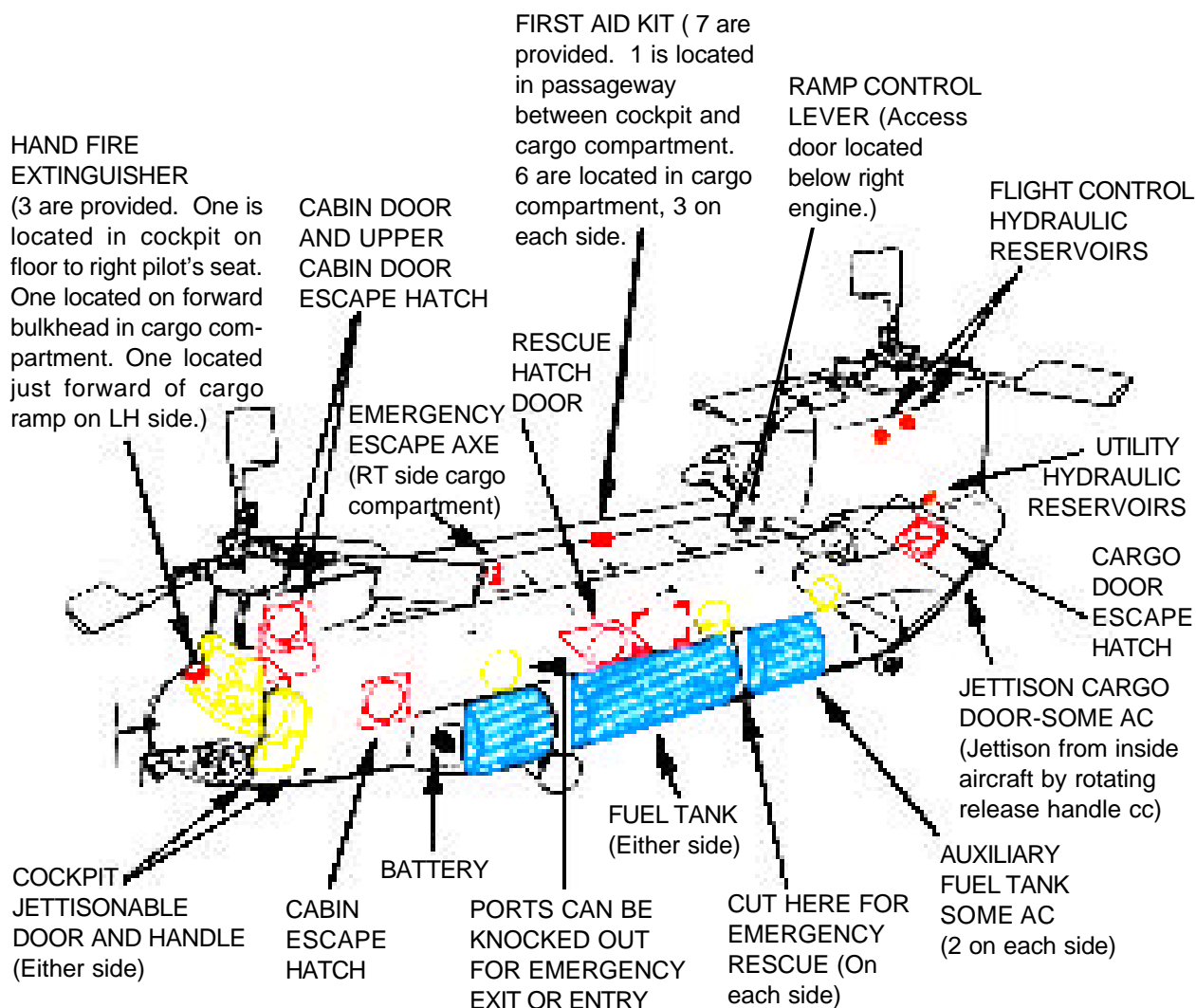
PASSENGERS: 33 Fully Equipped Ground Troops

LITTERS: 24 with 3 Medical Attendant Seats

1. AIRCRAFT ENTRY

- Emergency entrance to cockpit is gained through jettison doors by actuating handle labeled door jettison push trigger, turn handle. If door does not fall away, pull outward.
- Emergency entrance to cargo compartment is gained through cargo door or upper door escape hatch and cut out panels. All escape hatches can be opened by pulling the yellow tab out and pushing the panel in.
- An access door to the cargo ramp control lever is located on right side of aircraft below the right engine. Ramp may be lowered, providing emergency entrance, by placing the control lever in the DOWN position.
- A rescue hatch located in floor of cargo compartment may be used for emergency exit if lower rescue door has been previously opened.

CH-47 CHINOOK



USFS AIRCRAFT

CH-47 CHINOOK

1. NORMAL ENGINE SHUTDOWN

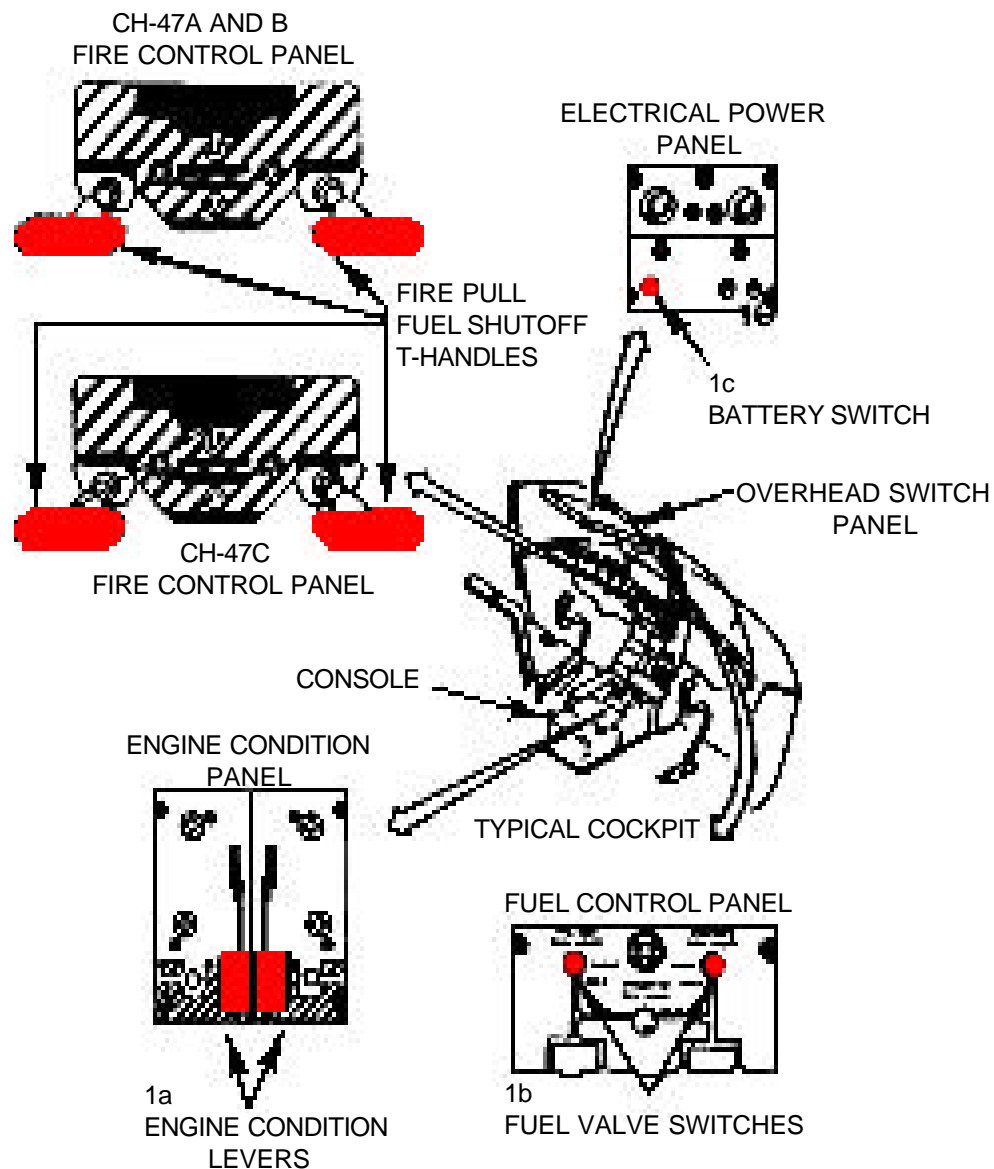
- Position engine condition levers, located on control pedestal to the STOP position.
- Position fuel valve switches, located on overhead fuel control panel to the CLOSE position.
- Position battery switch, located on overhead electrical control panel, to the OFF position.

NOTE:

If engines fail to shutdown, pull fuel shutoff T-handle, located at top of instrument panel, to the OUT position.

2. AIRCREW EXTRACTION

- Unlatch seat belts and remove shoulder harness from crewmember(s).



USFS AIRCRAFT

CL-215/CL-415 SUPER SCOOPER

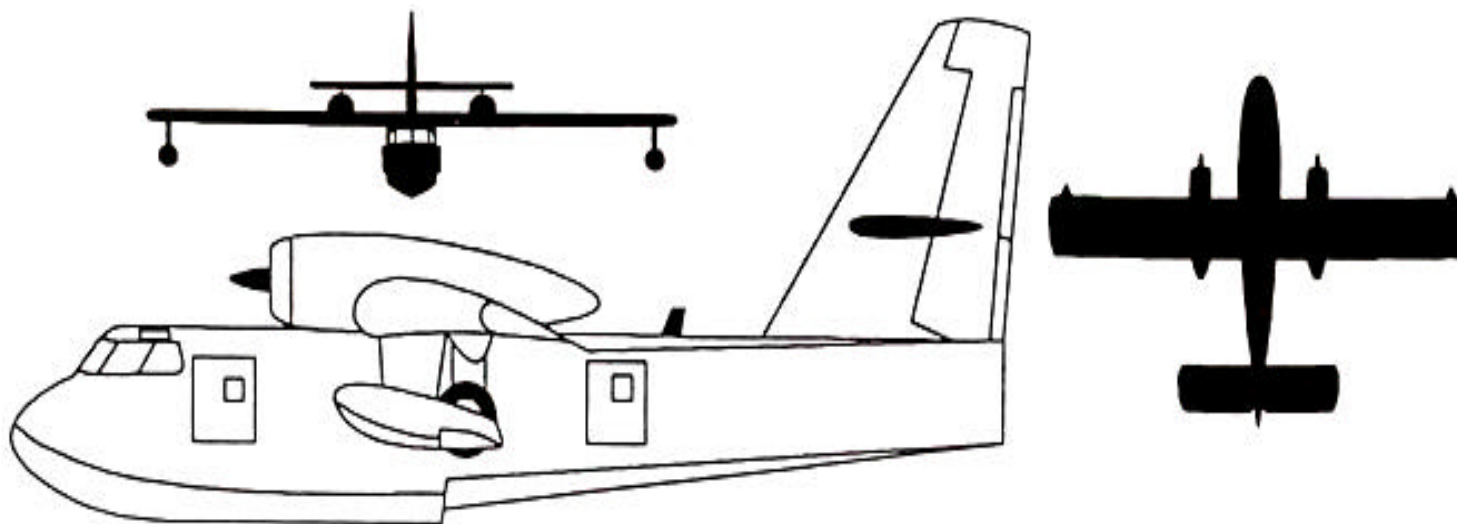
AIRCRAFT PRE-FIRE PLAN

AIRCRAFT TYPE: CL-415 Super Scooper (Canadair CL-215)

Reference: Mft. Info.

AIRCRAFT DESCRIPTION: The CL-415 is a Canadian aircraft (Canadair CL-215) aircraft built specifically for fire suppression. It is also used for maritime search and rescue. It first flew in 1967 and is an amphibian - can operate from land or water. It can be used for mixed retardant delivery or as a "water scooper" from lakes. The latest version is the CL-215T turbine model. It has foam injection on board that has proven to be successful on wildfires. The CL-215 has also been adapted for pest control spraying and has been used for dropping foam on oil fires. Canadian airtankers may be used in the U.S. under special arrangements when specific criteria have been met. An updated version of the CL-215 is the CL-415 with turbine engines. Two CL-415's from Quebec work under contract to Los Angeles County during fire season. Emergency procedures for the CL-215, CL-215T, and CL-415 are basically the same.

Model	Length (ft)	Wing Span (ft)	Turn Radius (ft)	Cruise Speed (kts/mpg)	Gross Weight (lbs)	Range Loaded (St miles.)	Contract Op. Wt. (lbs.)	Retardant Load (gallons)	Number Gates	ICS Type
CL-215	65	94	n/a	164/189	124,200	550	n/a	1300	2	3
CL-415	65	94	n/a	203/233	43,850	1310	n/a	1621	4	3



USFS AIRCRAFT

CL-215/CL-415 SUPER SCOOPER

HAZARDS

1. 1530 gallons / 10,250 pounds of jet fuel on-board (fully loaded), located in wings.
2. Fire extinguishers are located over the right crewmember and near the right side aft emergency exit.
3. Emergency crash axe is located on aft side of forward bulkhead near front (main) exit.
4. Aircraft can fly with one engine out.
5. 2 oxygen cylinders are located one behind each crewmember seat. 11.3 cubic feet.
6. 2 batteries located in the electrical compartment on the aft side of the forward bulkhead, on the right side. They can be found on the floor of this compartment.
7. Propeller danger zone 25 feet, Turbine blade failure 300 feet.
8. Engine exhaust 1500 feet.
9. Pneumatic system pressurized to 3000 psi.
10. Engine Oil: Turbine – 5 gallons, Piston – 36 gallons.
11. Hydraulic fluid – 3.4 gallons of Mil-H-5606.
12. Isopropyl alcohol/water windshield cleaner - 1 gallon.
13. Aircraft normally flies fire missions with two crewmembers. It may fly fire missions with a third crewmember seated between the flight crew. It is also capable of transporting eight passengers on non-fire missions in the forward cargo area.
14. Personnel must stay clear of water doors to prevent injury in event of inadvertent opening.
15. Fusible plugs in brakes will melt at 312 degrees Fahrenheit.

APPROACH TO ENTRY POINT (Engines running 80%+)

1. Approach directly from the nose, avoiding the propellers for a ten-foot radius.

PRE-DESIGNATED RESCUERMAN ACTIONS

1. GAIN ENTRY
 - a. **Normal entry** – Door located left side forward of wing, rotate handle clockwise to open. Swing door forward to locking position. NOTE: Base of door is 5' 6" above ground with wheels down.
 - b. **Emergency entry** – A 12-foot ladder will be needed to gain access to all entry points.
 - I. Door located aft of left wing, rotate handle counter-clockwise (UP) to open. Swing door inward and aft. NOTE: The lower portion of the door can be opened from the inside by reaching in and pulling aft the handle located near the forward edge of the door. CAUTION: If the upper and lower doors are located together, the upper door can not be opened from the outside of the aircraft.
 - II. Emergency cockpit access hatch is located in the top of the nose of the aircraft, forward of windshield. Break Plexiglas covering. PUSH red handle, which will cause door to swing down and forward.
 - III. Emergency escape hatch is located over the right crewmember. PULL red handle. Hatch swings up/out and towards centerline of aircraft. NOTE: A 24 foot extension ladder will be required to gain access to this point when the aircraft is on it's wheels. On some aircraft, the handle must be rotated counterclockwise to open position.
 - IV. Emergency Exit is located aft of right wing. PULL red handle and door will swing out and down.
 - c. **Cut-in / Forcible Entry** –
 - I. All windows, except for the forward facing windshield, are made of Plexiglas and can be broken for emergency access.
 - II. Cut around all windows and doors

USFS AIRCRAFT

CL-215/CL-415 SUPER SCOOPER

PRE-DESIGNATED RESCUER ACTIONS - CONTINUED

2. ENGINE SHUTDOWN
 - a. Move fuel mixture control levers, located on the center pedestal, to the full aft OFF position. NOTE: Levers must be lifted to clear detents to reach the full OFF position.
 - b. Move throttles, located on center pedestal, aft to the OFF position.
 - c. On the 415, move two battery toggle switches, located on the Electrical Control overhead panel between crewmembers, forward (down) to the OFF position. On the 215, place ignition master switch and electrical master switch to the OFF position.
 - d. NOTE: There are individual engine fire buttons located at the top of the forward console (dashboard). In the event of an engine fire, lift the cover of the appropriate engine fire button. Press the button and then press the extinguisher button immediately above this button.
 - e. The APU can be shutdown using the control panel located just aft on the main entry door. Set the ON/OFF/RESET GENERATOR switch to the OFF position, then set the ON/OFF POWER switch to the OFF position.
3. AIRCREW EXTRACTION
 - a. Unlatch lap belt and remove shoulder harness from crewmember(s). If seat track is not damaged during crash landing, use adjustable seat control to move seat in aft position when removing crewmembers. Passenger seats have shoulder harness.

OTHER FACTORS

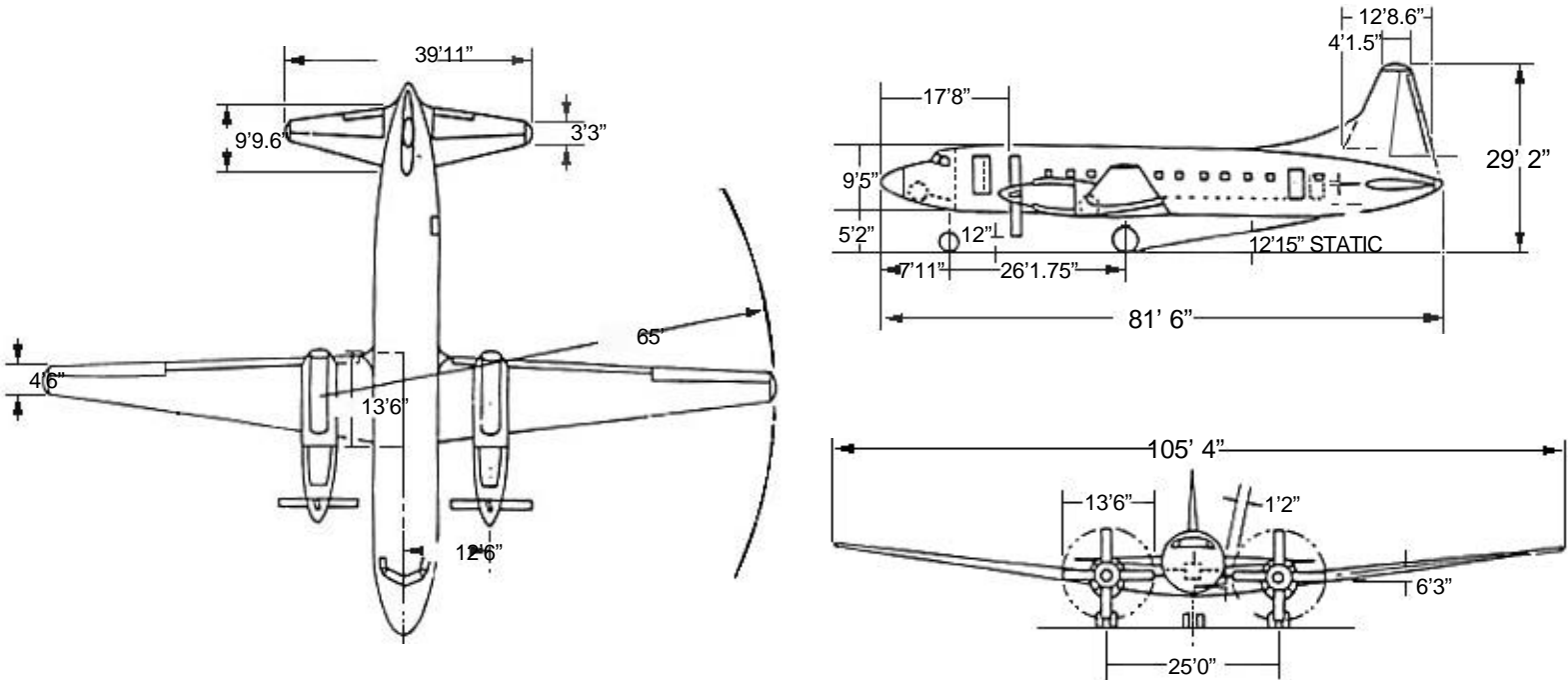
1. **Special tools/equipment:** Power rescue saw, 12-foot ladder, and crash axe.
2. Some crewmembers on Quebec aircraft may have difficulty in understanding English.
3. Location of switches and equipment and emergency shutdown procedures may vary for individual aircraft. Crews should be briefed prior to aircraft dispatch.

AIRCRAFT PRE-FIRE PLAN

AIRCRAFT TYPE: Convair 580 Reference: Mfg. Info.

AIRCRAFT DESCRIPTION: The Convair 580 was originally a commercial airliner that was manufactured in the mid 1950's. Today, Convair Aviation of Abbotsford, British Columbia, Canada has converted two of these aircraft into the airtanker role.

Length (ft)	Wing Span (ft)	Turn Radius (ft)	Cruise Speed (kts/mpg)	1.5 Hour Fuel Load (gals)	Bucket Size (gals)	Fixed Wt. Reduction (lbs)	Fuel Consumption (gals/hrs)	Typical Equip. Wt. (lbs)	Number of Pax Seats	ICS Type
81' 6"	105' 4"	66'								



USFS AIRCRAFT

CONVAIR 580

HAZARDS

1. 1730 gallons / 12000 pounds of Jet A on-board (fully loaded), located in wings. (Wet wing) Fuel cell vents located approximately 12 feet from wing tip on lower surface.
2. Two batteries located in aft of left wing near fuselage. Open access door, to expose crank handle and its retaining pin. Remove pin and crank to lower battery tray two inches, disconnecting the battery.
3. One or two oxygen cylinders located behind right crewmember. Turn handle clockwise to close each bottle.
4. Propeller danger zone 25 feet
5. Prop blast 60 feet, jet blast is more hazardous
6. Hydraulic system pressurized to 3000 psi.
7. Engine Oil – 8.4 gallons per engine
8. Hydraulic fluid – 9.5 gallons.
9. 2 nitrogen cylinders located in left main wheel well.
10. Composite materials located in fire retardant tank fairings.
11. Avoid forcible entry behind flightcrew (electrical) and in floor behind left crewmember (hydraulic).

APPROACH TO ENTRY POINT (Engines running 80%+)

1. Approach directly from the tail, avoiding the propellers for a ten-foot radius, or under trailing edge of wing, from tip to fuselage.

PRE-DESIGNATED RESCUERMAN ACTIONS

1. GAIN ENTRY
 - a. **Normal** -
 - I. Two doors on right side. Turn handle up and open doors UP.
 - II. One door on left, aft of wing. Rotate handle counter clockwise and swing door forward.
 - III. NOTE: Original passenger door with airstair, forward of left wing is inoperable!
 - b. **Emergency Entry** – Two overwing hatches, each side. PULL handle and push hatch into aircraft.
 - c. **Cut-in / Forcible Entry** – Cut around frame of entry hatch.
2. ENGINE SHUTDOWN
 - a. **NORMAL** – Turn-off fuel and ignition switches located above left crewmember. Battery master located overhead, right of center on DC Electrical Panel.
 - b. **EMERGENCY** – pull EMERGENCY handles located just below the glare shield.
3. AIRCREW EXTRACTION
 - a. 3 Crewmembers are attached to seats by shoulder harnesses secured to a lap belt quick disconnect fitting. PULL lap belt quick disconnect fitting shoulder harness and lap belts will fall free.

OTHER FACTORS

1. **Special tools/equipment:** Power rescue saw and crash axe.
2. **ACCESS FOR ENGINE FIRE** – Inlet and exhaust holes or lower bottom section of cowl can be opened by releasing 4 catches, located about four feet aft of the prop.
3. **AUXILLIARY POWER UNIT** – Located in right engine nacelle. Ignition switch located above First Officer, turn to OFF position. For fire, use Right engine fire extinguishers.
4. Fire retardant tank has emergency pressure supply to open doors. This can be detonated anytime from the cockpit. Switch located on center console (Guarded).
5. Locations of switches and equipment and emergency procedures may vary for individual aircraft. Crews should be briefed prior to aircraft dispatch.

COMMUNICATIONS PLAN: National Air Tanker frequency – 123-975. This is the frequency used by all air tanker bases, air tankers and air tanker support aircraft during fire fighting operations.

AIR TANKERS OF THIS TYPE: 44, 45, 53, 54, 55 (Company call signs will have a "4" in front of tail numbers.)

USFS AIRCRAFT

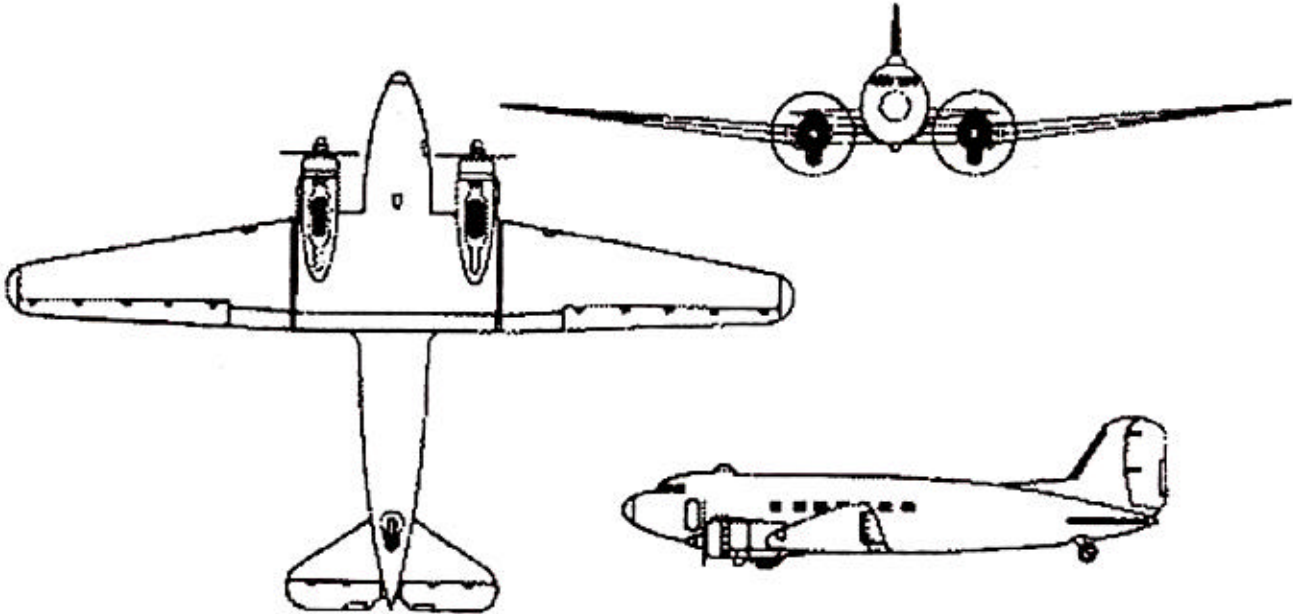
DC-3 DOUGLAS TURBINE

AIRCRAFT PRE-FIRE PLAN

AIRCRAFT TYPE: Douglas Turbine DC-3/C-117C/BT-67 Reference: None

AIRCRAFT DESCRIPTION: Original DC-3's were designed and built by Douglas Aircraft in the late 1930's. They were used extensively during World War II as military transports and for delivery of airborne paratroopers. After the war they became one of the most common airliners. The DC-3 was the first airplane to fly enough safe seat/miles to satisfy an insurance company. Original DC-3's were powered by radial engines. In 1991 two Forest Service DC-3's were given new life with turbine engines. This aircraft is used for smokejumping, paracargo, passenger and cargo transport, and can land on unpaved airstrips. It has excellent short and soft field takeoff and landing characteristics. DC-3's that have been updated with turbo-prop engines, five blade propellers and a 40 inch fuselage plug forward of the wing, are referred to as BT-67's.

Length (ft)	Wing Span (ft)	Turn Radius (ft)	Cruise Speed (mph)	Range (St. miles)	Gross Weight (lbs.)	Contract Op. Wt. (lbs.)	Pay Load (gallons)	Number of Pax (Seats)	Number of Jumpers
58	96	n/a	182/210	1150	n/a	n/a	9000	20-30	12-20



USFS AIRCRAFT

DC-3 DOUGLAS TURBINE

HAZARDS

1. 2,374 gallons / 15,905.8 pounds of jet fuel on-board (fully loaded), located in wings and fuselage.
2. 9 oxygen cylinders in various locations. (4 fixed under fuselage near wing roots, and 5 portable cylinders in the forward section and cockpit of the aircraft.)
3. Two batteries located forward of the wing, underside of fuselage.
4. Propeller danger zone 25 feet
5. Turbine blade failure 300 feet.
6. Pneumatic system pressurized to 3000 psi.

APPROACH TO ENTRY POINT (Engines running 80%+)

1. Approach directly from the left hand side, aft of the wing, avoiding the propellers for a ten-foot radius.

PRE-DESIGNATED RESCUERMAN ACTIONS

1. GAIN ENTRY
 - a. **Normal entry –**
 - I. Rotate main cabin entrance door handle, located on main cabin entrance door, clockwise. Open door outward.
 - II. PULL pilot's cargo door handle, located on pilot's cargo door, DOWN. Open door outward.
 - b. **Emergency entry –**
 - I. PULL emergency exit external handle, located on emergency hatch aft of wing, each side of fuselage, to unlock and PULL emergency exit hatch outward.
 - II. Rotate pilots escape hatch handle, located forward top center of fuselage, CLOCKWISE. PULL hatch up and aft.
 - c. **Cut-In –** Cut-in areas are located at normal and emergency entrance points and at pilot's windows, left and right side of cockpit.
 2. ENGINE SHUTDOWN
 - a. Power levers, located on pedestal between crewmembers, to OFF.
 - b. Generators located on triangular panel over right crewmembers seat, to OFF.
 - c. Condition levers, located pedestal between crewmembers, to STOP.
 - d. Main & Standby fuel pumps, located on the right side of the center overhead panel, to OFF.
 - e. Battery switch located on triangular panel over right crewmembers seat, to OFF.
- AIRCREW EXTRACTION**
- a. Unlatch lap belt and remove shoulder harness from crewmember(s). NOTE: If seat tracks are not damaged during crash landing use adjustable seat control to retract seats to aft position in removing crewmember(s).

OTHER FACTORS

1. **Special tools/equipment:** Power rescue saw and crash axe.
2. Location of switches and equipment and emergency shutdown procedures may vary for individual aircraft. Crews should be briefed prior to aircraft dispatch.

COMMUNICATIONS PLAN: National Air Tanker frequency – 123.975. This is the frequency used by all air tanker bases, air tankers, and air tanker support aircraft during fire fighting operations.

USFS AIRCRAFT

DC-4

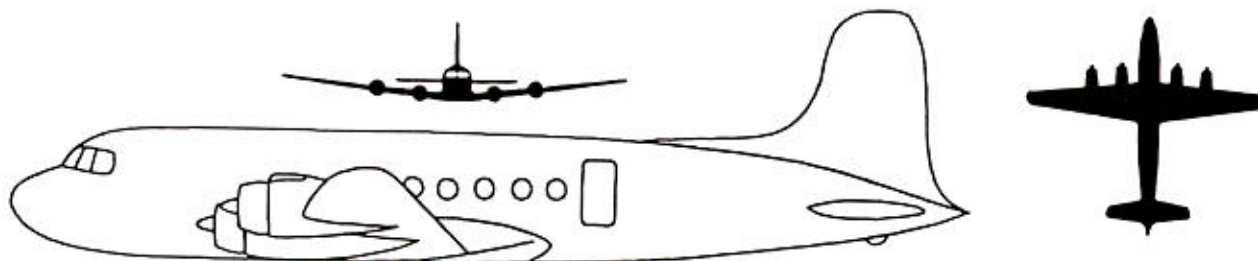
AIRCRAFT PRE-FIRE PLAN

AIRCRAFT TYPE: DC-4 Airliner/C-54A,D,E, & G

Reference: None

AIRCRAFT DESCRIPTION: A popular airtanker, the DC-4 has been acquired both military surplus and from airlines. It is a little slower than most other airtankers, but can operate from shorter and less weight restricted airports. The DC-4 is considerably smaller than the DC-7 and DC-6 and has round cabin windows. The round windows and three blade propellers can identify it. The "Super" DC-4 is a stock model that has been converted to operate with larger engines. Tanker 15 has one longitudinal or constant flow door. The C-54 is the USAF version and was once assigned to NORAD. An identifier was the installed "picture window".

Length (ft)	Wing Span (ft)	Turn Radius (ft)	Cruise Speed (mph)	Range Loaded (St. miles)	Gross Weight (lbs.)	Contract Op. Wt. (lbs.)	Retardant Load (gallons)	Number Gates	ICS Type
93	118	86	178/205	1100	65,000	63,000	2000	4 to 8	2



HAZARDS

1. 3,720 gallons / 24924 pounds of av-gas on-board (fully loaded), located in wings and fuselage. Fuel load is generally only 1000 gallons / 6700 pounds.
2. Two batteries located aft of nose wheel well.
3. Propeller danger zone 25 feet
4. Engine exhaust 1500 feet.
5. Pneumatic system pressurized to 3000 psi.
6. Normal floor height for cargo door from ground is 8 feet, 10 inches.
7. Do not attempt to cut into the fuselage over the cockpit – area contains main electrical distribution location.

APPROACH TO ENTRY POINT (Engines running 80%+)

1. Approach directly from the left side, aft of the wings, avoiding the propellers for a ten-foot radius.

USFS AIRCRAFT

DC-4

PRE-DESIGNATED RESCUERMAN ACTIONS

1. GAIN ENTRY
 - a. **Normal entry –**
 - I. Rotate aft cargo door external handle, located on left aft fuselage, COUNTER-CLOCKWISE and PULL doors outward.
 - II. Rotate forward right crew door handle, located forward right fuselage, CLOCKWISE and PUSH door inward. NOTE: If collapsed nose gear occurs enter through main door. Height requires a 12-foot ladder.
 - b. **Emergency entry –**
 - I. Rotate crew forward door handle, located right forward fuselage, CLOCKWISE and PUSH door inward.
 - II. PULL astrodome external release ring, located top forward fuselage, and PUSH astrodome inward, if equipped.
 - III. PULL cargo doors emergency hinge pin release cable, located left aft fuselage, to release cargo doors.
 - IV. Overwing hatches "pop" handle out and rotate down. Push hatch in and let fall to floor.
 - v. Four (4) emergency exits located over wings. Two are located at the center of the wing, two are located just aft of the flap.
 - c. **Cut-In –**
 - I. Along marked areas.
 - II. Around aft cargo door.
 - III. Top of fuselage over aft cargo area.
2. ENGINE SHUTDOWN
 - a. **Normal Shutdown -**
 - I. Retard throttles, located on control pedestal, to full aft position.
 - II. Place mixture controls, located on control pedestal, to aft IDLE CUT-OFF. Wait for engines to stop.
 - III. Place master ignition switches, located upper instrument panel, to OFF position.
 - IV. Place master battery switch, located pilot's overhead panel, to OFF position.
3. AIRCREW EXTRACTION
 - a. Release lap belts and remove shoulder harness restraint straps. NOTE: If seat tracks are not damaged during crash landing use adjustable seat control handle to retract seat to aft position.

OTHER FACTORS

1. **Special tools/equipment:** 12-foot ladder, Power rescue saw and crash axe.
2. Engines will generate a large amount of smoke when starting.
3. Extra fuel in the exhaust stack may ignite and immediately burn itself out.
4. Can fly with one engine shutdown.
5. If asked to rotate prop, rotate clockwise when looking at prop. NOTE: Fire fighters should avoid doing this!
6. Location of switches and equipment and emergency shutdown procedures may vary for individual aircraft. Crews should be briefed prior to aircraft dispatch.

COMMUNICATIONS PLAN: National Air Tanker Frequency – 123.975. This is the frequency used by all air tanker bases, air tankers and air tanker support aircraft during fire fighting operations.

AIR TANKER CALL-SIGNS:

14, 15, 65, 119, 151, 152, 160, 161.

USFS AIRCRAFT

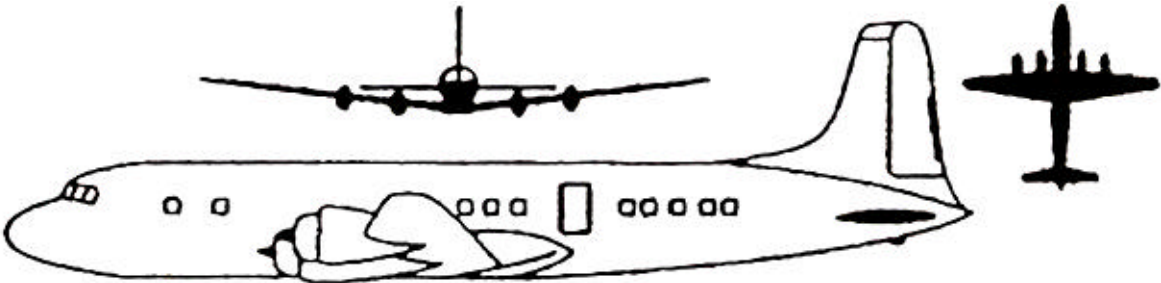
DC-6

AIRCRAFT PRE-FIRE PLAN

AIRCRAFT TYPE: DC-6 Airliner/C-118 Reference: Boeing Info., T.O. 00-105E-9

AIRCRAFT DESCRIPTION: This airtanker, the DC-4, was first used in 1971 and about ten have been converted since then. There are not many currently in service. Most had tanks constructed to hold three thousand gallons, but were usually down-loaded to meet performance requirements. The airplane has been a very satisfactory airtanker. The DC-6 looks similar to the DC-7 as it has the same wingspan and square windows, but is about one foot shorter in length and has smaller engines. It has either no windows or two windows forward of the wing and three bladed propellers.

Length (ft)	Wing Span (ft)	Turn Radius (ft)	Cruise Speed (mph)	Range Loaded (St. miles)	Gross Weight (lbs.)	Contract Op. Wt. (lbs.)	Retardant Load (gallons)	Number Gates	ICS Type
111	118	85	208/240	1300	92,200	86,200	2400	6 to 8	2



USFS AIRCRAFT

DC-6

HAZARDS

1. 5404 gallons / 36206.8 pounds of jet fuel on-board (fully loaded), located in wings and fuselage.
2. 1 oxygen cylinder near cockpit or two in the over wing area.
3. Two batteries located in nose.
4. Propeller danger zone 25 feet
5. Engine exhaust 1500 feet.
6. Do not attempt to cut into the fuselage over the cockpit – area contains main electrical distribution location.

APPROACH TO ENTRY POINT (Engines running 80%+)

1. Approach directly from the nose, avoiding the propellers for a ten-foot radius.

PRE-DESIGNATED RESCUERMAN ACTIONS

1. GAIN ENTRY
 - a. **Normal entry –**
 - I. Rotate external control handle located on passenger entrance door left side of fuselage, UP to open passenger entrance door outward.
 - II. Rotate external control handle, located on crew entrance door forward right side of fuselage UP to open crew entrance door outward.
 - b. **Emergency entry –** PULL handle on emergency exits, located over each wing, OUT and PULL hatch outward.
 - c. **Cut-in –**
 - I. Cut-in areas are located at normal and emergency entrances on aircraft and at cargo compartment windows and doors.
 - II. Top of fuselage.
2. ENGINE SHUTDOWN
 - a. **Emergency Shutdown -**
 - I. PULL engine emergency T-handles, located on main fire control panel, FULL, OUT.
 - b. **Normal Shutdown -**
 - I. Retard throttles, located on control pedestal, to CLOSED position.
 - II. Place mixture control levers, located on control pedestal, to CLOSED position.
 - III. Place ignition switches, located on forward overhead panel to OFF position.
 - IV. Place master battery/generator switches cutoff bar, located forward overhead panel, to OFF position.
3. AIRCREW EXTRACTION
 - a. Unlatch lap belt and remove shoulder harness from crewmember(s). NOTE: If seat tracks are not damaged during crash landing, use adjustable seat control to retract seat to aft position in removing crewmember(s).

OTHER FACTORS

1. **Special tools/equipment:** Power rescue saw and crash axe.
2. Engines will generate a large amount of smoke when starting.
3. Extra fuel in the exhaust stack may ignite and immediately burn itself out.
4. Location of switches and equipment and emergency procedures may vary for individual aircraft. Crews should be briefed prior to aircraft dispatch.

COMMUNICATIONS PLAN: National Air Tanker Frequency – 123.975. All air tanker bases, air tankers and air tanker support aircraft during fire fighting operations, use this frequency.

AIR TANKER CALL-SIGNS: 68

USFS AIRCRAFT

DC-7

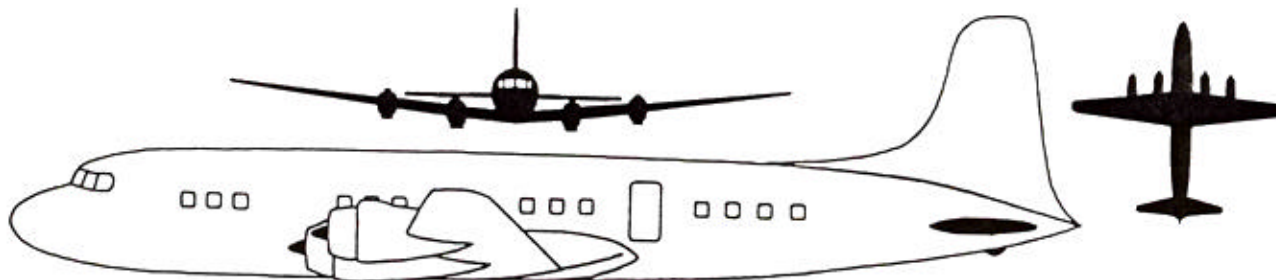
AIRCRAFT PRE-FIRE PLAN

AIRCRAFT TYPE: DC-7 Airliner

Reference: Boeing Info., T.O. 00-105E-9

AIRCRAFT DESCRIPTION: This is one of the few airtankers that did not come from military surplus. All were originally certificated as transports or airliners. The B and C models are big brothers to the DC-6. Late C models had an allowable gross weight up to 135,000 pounds. The retardant tank holds three thousand gallons and the airplane is very capable of carrying this load. It went into service as an airtanker in 1976 and has achieved an excellent record. The DC-7 is distinguished from the DC-6's by three windows forward of the wing and a four blade propeller. Its square windows distinguish it from the DC-4. Weights and dimensions vary considerably between the B, C and wide track C models. Data listed below is for the DC-7B.

Length (ft)	Wing Span (ft)	Turn Radius (ft)	Cruise Speed (mph)	Range Loaded (St. miles)	Gross Weight (lbs.)	Contract Op. Wt. (lbs.)	Retardant Load (gallons)	Number Gates	ICS Type
112	128	84	226/260	1300	127,000	102,250	3000	6 to 8	1



HAZARDS

1. 7,600 gallons / 50,920 pounds of av-gas on-board (fully loaded), located in wings and fuselage.
2. Portable oxygen cylinders in right side of cockpit, can be on either side of the bulkhead.
3. Two batteries located in nose wheel well.
4. Propeller danger zone 25 feet
5. Engine exhaust 1500 feet.
6. Pneumatic system pressurized to 3000 psi.
7. **WHEEL FIRE** – Wheels are equipped with fusible plugs designed to melt and deflate the tire when the temperature is excessive. USE of Halon is preferred if the tires are pressurized, but dry chemical, fog or foam is acceptable. If all tires are deflated any fire-extinguishing agent may be used. **WARNING:** Approach landing gear truck from forward or aft when fighting a wheel fire as wheels and tires may explode.
8. Exhaust stack fires are not uncommon and will go out on their own.
9. Aircraft may fly with one engine shutdown.
10. Hydraulics are located on the in-board engines only.
11. 46 gallons of oil per engine. Engine will leak oil.
12. NOTE: A 12-foot ladder is required to gain access to all entry points.
13. Do not attempt to cut into the fuselage over the cockpit – area contains main electrical distribution location.

USFS AIRCRAFT

DC-7

APPROACH TO ENTRY POINT (Engines running 80%+)

1. Approach directly from the left side, aft of the wings, avoiding the propellers for a ten-foot radius. A 12-foot ladder is needed to gain access to all entry points when the aircraft is still on its wheels.

PRE-DESIGNATED RESCUERMAN ACTIONS

1. GAIN ENTRY
 - a. **Normal entry –**
 - I. Rotate handle, located on right forward passenger door, one half turn clockwise. Pull door out and swing forward.
 - II. Rotate handle, located left aft passenger door, counter clockwise, one half turn. Pull door out and swing forward.
 - b. **Emergency entry –**
 - I. Pull handle out, located on emergency exit hatches (4 each side), and rotate down. Swing hatch out and forward.
 - II. Pull handle, located right aft passenger emergency hatch out and push hatch in.
 - c. **Cut-in –** Top sides of fuselage and around doors and windows. Avoid cutting around left forward passenger door due to proximity of oxygen cylinder. NOTE: Cut-in areas require metal cutting portable power equipment. Because of type of structure and possible injury to personnel within, it is recommended that major effort to gain access be directed to hatches and doors. Urgency of situation will dictate necessity for cut-in.
2. ENGINE SHUTDOWN
 - a. Turn off electrical power by pushing gang bar, located right side of overhead console, forward.
 - b. Turn OFF magneto switches, located center forward of overhead console.
 - c. Pull fire T-handles, located top of dash, under glare shield, aft.
 - d. Pull fuel condition levers, located left forward of center pedestal, aft to OFF position.
 - e. Pull throttles, located center left side of pedestal, full aft to OFF position.
 - f. Push fuel mixture levers, located rear of pedestal left side, down to OFF position.
3. APU – NOTE: Some aircraft may have been upgraded with an APU to help start the engines. In most cases, the APU will be located inside of the cabin aft of the left side aft passenger door. (Tankers 60, 62, 66) To shutdown, move switch located aft of the overhead center console in the cockpit, aft to the OFF position.
4. AIRCREW EXTRACTION
 - a. Unlatch lap belt and remove shoulder harness from crewmember(s). If seat track is not damaged during crash landing, use adjustable seat control to move seat in aft position when removing crewmembers. Passenger seats do not have shoulder harness.

OTHER FACTORS

1. **Special tools/equipment:** Power rescue saw, crash axe and 12-foot ladder.
2. Fire access doors are located on each engine.
3. Engines will generate a large amount of smoke when starting.
4. Extra fuel in the exhaust stack may ignite and immediately burn itself out.
5. Location of switches and equipment and emergency shutdown procedures may vary for individual aircraft. Crews should be briefed prior to aircraft dispatch.

COMMUNICATIONS PLAN: National Air Tanker frequency – 123.975. This is the frequency used by all air tanker bases, air tankers and air tanker support aircraft during fire fighting operations.

AIR TANKER CALL-SIGNS: 29, 33, 60, 62, 66.

USFS AIRCRAFT

DHC-2 BEAVER

AIRCRAFT PRE-FIRE PLAN

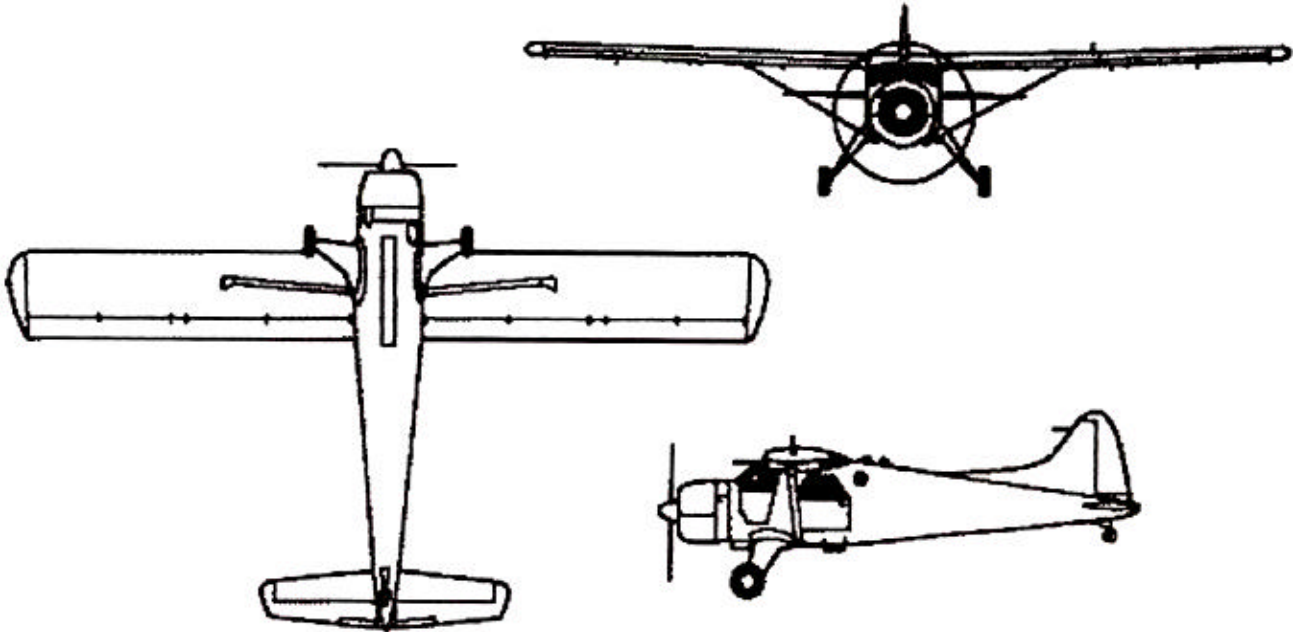
AIRCRAFT TYPE: de HavillandDHC-2 Beaver/U-6

Reference: T.O. 00-105E-9

AIRCRAFT DESCRIPTION: The Forest Service owns and operates Beavers in and around the many lake areas of Minnesota. They are used for aerial photography, seeding, fish stocking, and personnel movement. On wildfires they are used for water dropping. They can fill their water tank by scooping from lakes and can inject foam into the tank. This aircraft does not meet the Interagency Airtanker Board criteria for an airtanker. It is not technically an airtanker. The U-6 is an USAF designation.

Length (ft)	Wing Span (ft)	Turn Radius (ft)	Cruise Speed (mph)	Range Loaded (St. miles)	Gross Weight (lbs.)	Contract Op. Wt. (lbs.)	Retardant Load (gallons)	Number Gates	ICS Type
30	48	n/a	100/115	500	5100	n/a	125	1	n/a

NOTE:
For more information, refer to Chapter 12.



USFS AIRCRAFT

DHC-2 BEAVER

HAZARDS

1. 111 gallons / 743.7 pounds of aviation gasoline on-board (fully loaded), located in wing tips and underside of fuselage.
2. One battery located in aft cabin area.
3. Propeller danger zone 25 feet

APPROACH TO ENTRY POINT (Engines running 80%+)

1. Approach directly from the side, avoiding the propeller for a ten-foot radius.

PRE-DESIGNATED RESCUER ACTIONS

1. GAIN ENTRY
 - a. Normal entry –
 - I. Flight compartment doors (two), located on each side of fuselage
 - II. Cabin compartment doors (two) located aft of flight compartment doors on each side of fuselage.
 - b. Emergency entry –
 - I. Break window in flight compartment and pull jettison door lever, located forward of left and right fuselage doors, and pull aft, pull door outwards.
 - II. Break window in cabin compartment and pull jettison door lever, located forward of left and right fuselage doors, forward or aft, pull door outward.
 - c. Cut-In – Cut in doors and windows as required.
2. ENGINE SHUTDOWN
 - a. Retard mixture and throttle levers, located on upper center console, to CLOSED position.
 - b. Place fuel and oil emergency shut-off lever, located on lower control pedestal, down to CLOSED position.
 - c. Turn ignition switch, located on left side of forward console, to OFF position.
 - d. Push battery master switch, located on left forward console, down to OFF position.
3. AIRCREW EXTRACTION
 - a. Unlatch lap belts and remove shoulder harness from crewmember(s).

OTHER FACTORS

1. **Special tools/equipment:** Power rescue saw and crash axe.
2. Location of switches and equipment and emergency shutdown procedures may vary for individual aircraft. Crews should be briefed prior to aircraft dispatch.
3. Aircraft skin penetration points for engine are located 6 inches forward of cockpit firewall along aircraft centerline and near tail on the fuselage at panel F.S. 113, 5 inches below centerline.

COMMUNICATIONS PLAN: National Air Tanker frequency – 123.975. All air tanker bases, air tankers, and air tanker support aircraft use this frequency during fire fighting operations.

USFS AIRCRAFT

DHC-6 TWIN OTTER/U-18

AIRCRAFT PRE-FIRE PLAN

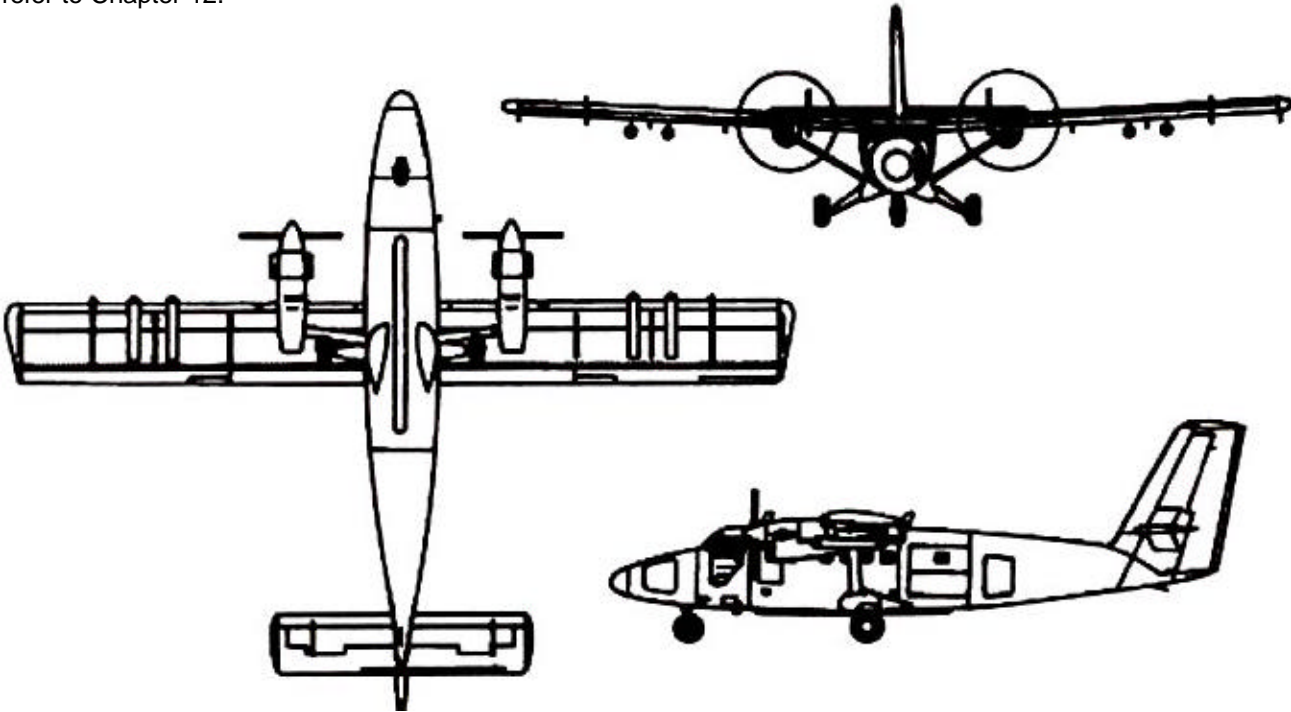
AIRCRAFT TYPE: de Havilland DHC-6 Twin Otter/U-18

Reference: Era Aviation/T.O. 00-105E-9

AIRCRAFT DESCRIPTION: This turbine-powered aircraft has excellent short field takeoff and landing capability. At one time it was the airplane of choice for small commuter airlines transporting up to nineteen passengers. It is well suited for agency operations at unimproved backcountry airfields and is often used to transport passengers, paracargo and smokejumpers. It is unpressurized and slow, but very stable, maneuverable, and has good endurance for longer flights. The aircraft systems and maintenance required are relatively simple. The landing gear does not retract. The U-18 is an USAF designation.

Length (ft)	Wing Span (ft)	Turn Radius (ft)	Cruise Speed (mph)	Range Loaded (St. miles)	Gross Weight (lbs.)	Contract Op. Wt. (lbs.)	Payload (gallons)	Number Gates	Number of Jumpers
52	65	n/a	148/170	450	n/a	n/a	3000	15 - 19	8

NOTE:
For more information, refer to Chapter 12.



USFS AIRCRAFT

DHC-6 TWIN OTTER/U-18

HAZARDS

1. 380 gallons / 2546 pounds of Jet A located under floor of passenger / smokejumper section. (Aircraft N320EA has 44 gallon wing tanks mounted on the outboard tips of each wing.
2. Oxygen: Two locations – Two – 1800 PSI cylinders mounted in ceiling of aft baggage compartment for passengers. The emergency shutoff is also located here. One - 1800 PSI cylinder mounted in nose for pilot and co-pilot. Emergency shutoff is located on console.
3. Battery: rear baggage compartment.
4. 6 gallons of hydraulic fluid, system pressurized to 1575 psi.
5. Turbo propellers: Two 8'6" diameter blades.
6. Aircraft materials: Skin is aluminum, cabin floor is low-density aluminum, tail section is high strength aluminum alloys, and windscreen/windows is acrylic plastics.
7. Radar hazard in nose cone.

APPROACH TO ENTRY POINT (Engines running 80%+)

1. Approach directly from the nose, avoiding the propellers for a ten-foot radius.

PRE-DESIGNATED RESCUERMAN ACTIONS

1. GAIN ENTRY
 - a. **Normal entry**
 - I. The cabin can be entered through the main entry door, located on the right aft side of the fuselage, by rotating the unlock handle counterclockwise.
 - II. The cabin can be entered through the paratroop door or airstair door or an optional double cargo door, located on the left aft side of the fuselage, by rotating the unlock clockwise.
 - III. Crew entry can be entered through the cockpit doors, located on either side of the fuselage, by rotating the unlock handle clockwise for the left door and counterclockwise for the right.
 - b. **Emergency entry – WARNING! Do not use cockpit doors or emergency exits if engines are operating. Rotating blades can injure or cause death if contact is made.**
 - I. Locate unlock handle on main entry door, or passenger/paratroop door, or cargo door. Rotate unlock handle in appropriate fashion and enter.
 - II. Emergency exits are located just aft of cockpit doors.
 - c. **CUT-IN** – By using a 25' ladder, access the top of the fuselage and cut a hole between the main entry and passenger/paratroop or cargo doors.
2. ENGINE SHUTDOWN
 - a. Retard engine fuel levers, located on right side of overhead console, AFT to full OFF position.
 - b. Retard propeller levers, located forward center of overhead console, to CENTER position, push in to clear stop or detent, then AFT to FEATHER position.
 - c. Pull master switch, located on left forward corner of overhead console, OUT to OFF position.
3. AIRCREW EXTRACTION
 - a. Unfasten seat belts from crew and passengers or paratroopers, and remove from aircraft.

OTHER FACTORS

1. **Special tools/equipment:** Power rescue saw, 25' foot ladder and crash axe.
2. Location of switches and equipment and emergency shutdown procedures may vary for individual aircraft. Crews should be briefed prior to aircraft dispatch.

COMMUNICATIONS PLAN: National Air Tanker frequency – 123.975. This is the frequency used by all air tanker bases, air tankers, air tanker support aircraft during fire fighting operations.

USFS AIRCRAFT

FOKKER F-27

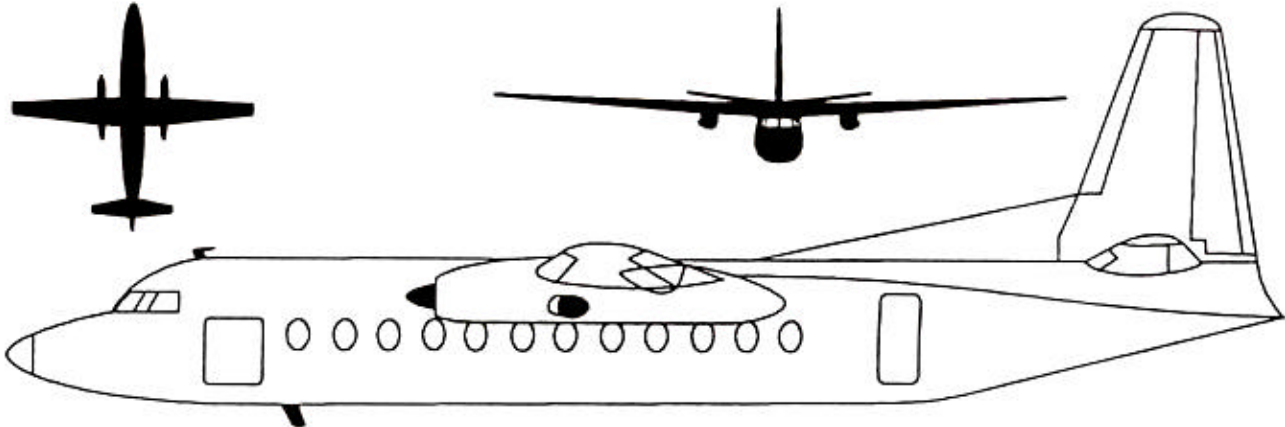
AIRCRAFT PRE-FIRE PLAN

AIRCRAFT TYPE: Fokker F-27 Reference: FedEx Crash Chart/ T.O. 00-105E-9

AIRCRAFT DESCRIPTION: The F-27 was designed as a commuter aircraft and is also used extensively for airfreight. The Canadians have adapted this aircraft for airtanker work. Canadian airtankers may be used in the U.S. under special agreements when specific criteria have been met. The C-31 is the US Army designation.

Length (ft)	Wing Span (ft)	Turn Radius (ft)	Cruise Speed (mph)	Range Loaded (St. miles)	Gross Weight (lbs.)	Contract Op. Wt. (lbs.)	Retardant Load (gallons)	Number Gates	ICS Type
83	95	64	240/276	500	45,000	n/a	1600	8	3

NOTE:
For more information, refer to Chapter 16.



USFS AIRCRAFT

FOKKER F-27

HAZARDS

1. Up to 4455.5 pounds / 65 gallons of jet fuel on-board (fully loaded), located in wings.
2. Battery is located in the nose area of the aircraft.
3. Fire extinguisher located between pilot seats.
4. Propeller – Maintain 10 feet of separation from moving propeller.
5. Carries one 1800-psi oxygen cylinder located near the co-pilot's seat.
6. Engine Oil - .66 gallons
7. Gear box oil – 0.64

APPROACH TO ENTRY POINT: (Engines running 80%+)

1. First-in crew should attempt to establish a rescue path to the crew door (right and left side, forward), or maintain a rescue path to the exit primarily being used by occupants for egress. CAUTION: avoid propeller for ten-foot radius. Approach directly from the nose, avoiding the propellers for a ten-foot radius.

PRE-DESIGNATED RESCUERMAN ACTIONS:

1. GAIN ENTRY
 - a. *Main cabin door* – Located left side, raft of wing. Lift handle and turn. PUSH door inward. Move door upwards. Use grip, slide door to the right. If door won't slide, PUSH red knob.
 - b. *Right side main cabin door* – Lift handle and turn. Push door inwards and upwards.
 - c. *Cargo door*: PULL handle and PULL cargo door. **OR** Lift handle and turn. Push door upwards.
 - d. *Under wing hatches (2 each side)* – Press button and push window in. NOTE: 2nd emergency window is optional.
2. ENGINE SHUTDOWN
 - a. Pull high pressure cut off all the way aft.
3. AIRCREW EXTRACTION
 - a. Unlatch lap belt and remove shoulder harness from crewmember(s). If seat track is not damaged during crash landing, use adjustable seat control to move seat in aft position when removing crewmembers.

OTHER FACTORS:

1. **Special tools/equipment:** Power rescue saw and crash axe.
3. Base of passenger door is maximum 3 feet off of ground with aircraft on its wheels.
4. Location of switches and equipment and emergency shutdown procedures may vary for individual aircraft. Crews should be briefed prior to aircraft dispatch.

COMMUNICATIONS PLAN: National Air Tanker Base Frequency – 123.975. All air tanker bases, air tankers and air tanker support aircraft monitor this frequency during fire fighting operations.

USFS AIRCRAFT

GRUMMAN S-2F TRACKER

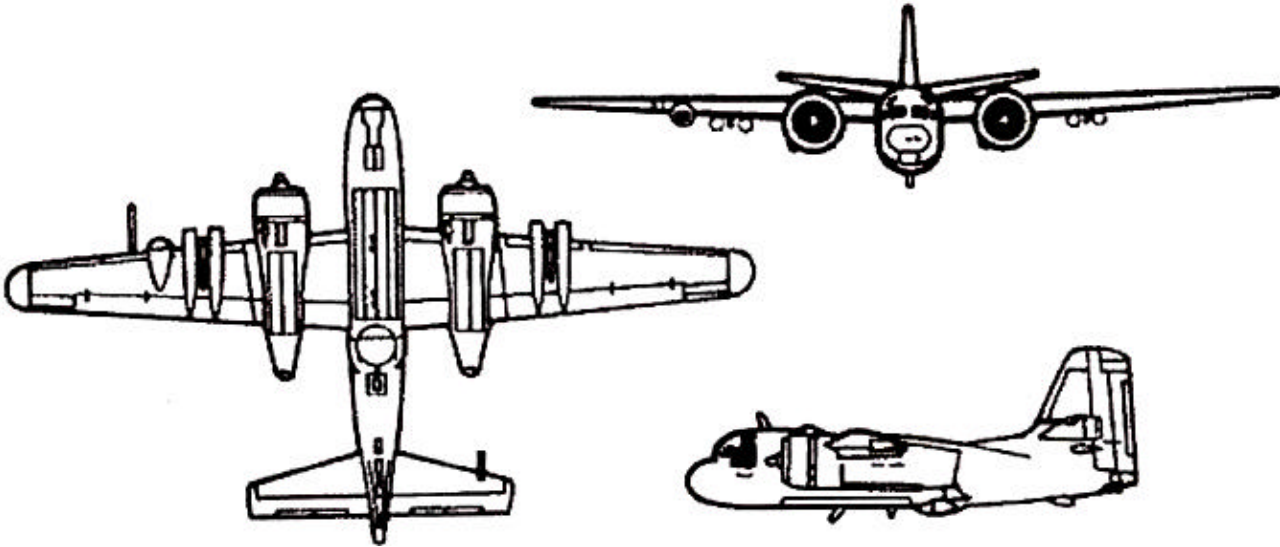
AIRCRAFT PRE-FIRE PLAN

AIRCRAFT TYPE: Grumman S-2F Tracker Reference: CDF Info./T.O. 00-105E-9

AIRCRAFT DESCRIPTION: The S-2's were used extensively by the US Navy as surveillance aircraft. S-2F's are used by the California Department of Forestry (CDF), and by the Canadians. CDF operates them without lead planes but usually under the supervision on Air Tactical Group Supervisor. Canadian airtankers may be used in the U.S. under special agreements when specific criteria have been met. The CDF S-2 airtankers are being modernized to turbine power, longer fuselages, and large retardant tanks. **Information is for the S-2 recip version airtanker.** Marsh Aviation has upgraded and extensively modified the Grumman S-2 for the California Department of Forestry. Modifications include turboprop engines, a new electrical system, new avionics, and a new 1200 gallon constant flow retardant tanksystem. NATO (Turkey) uses the S-2E model.

Model	Length (ft)	Wing Span (ft)	Turn Radius (ft)	Cruise Speed (kts/mpg)	Gross Weight (lbs)	Range Loaded (St miles.)	Contract Op. Wt. (lbs.)	Retardant Load (gallons)	Number Gates	ICS Type
S-2	44	73	45	175/200	27,000	1500	25,000	800	4	3
Turbine	65	73	45	250 kts	29,200	1500	29,200	1200	1	3

NOTE:
For more information, refer to Chapter 31.



USFS AIRCRAFT

GRUMMAN S-2F TRACKER

HAZARDS

1. 544 gallons / 3644.8 pounds of av-gas on-board (fully loaded), located in wings. Turbine 728 gals / 4878 lbs Jet A.
2. One battery located in rear of fuselage. Turbine – 2 batteries located in nose.
3. Propeller danger zone 25 feet
4. Engine exhaust 60 feet.
5. Pneumatic system pressurized to 3000 psi.
6. Engine Oil – 12 gallons
7. Hydraulic fluid – 9.4 gallons. Turbine – 6 quarts

APPROACH TO ENTRY POINT (Engines running 80%+)

1. Approach directly from the tail, avoiding the propellers for a ten-foot radius.

PRE-DESIGNATED RESCUERMAN ACTIONS

1. GAIN ENTRY
 - a. **Normal entry** – Hatch is located right side, aft of the propeller. Move top lever forward to unlock position. Rotate handle clockwise, one-quarter turn to the open position.
 - b. **Emergency entry** –
 - I. Emergency escape hatch is located forward right hand side of fuselage over cockpit area. Hatch will open outwards. Rotate handle to open position.
 - II. Emergency escape hatch is located aft on top centerline of fuselage. Hatch opens inward. Rotate handle to open position.
 - c. **Cut-in / Forcible Entry** – Cut around frame of entry hatch.
2. ENGINE SHUTDOWN
 - a. Place mixture control levers, located on center overhead console, to IDLE CUTOFF. *On turbine, only need to pull T-handles located on forward console. Then go step "d".*
 - b. Place throttles, located on center overhead console, to the CLOSED position.
 - c. Place ignition switch, located lower left corner of main dash, to the OFF position.
 - d. Place battery switch, located lower left corner of center overhead console, to the OFF position.
3. AIRCREW EXTRACTION
 - a. Crewmembers and passengers are attached to seats by shoulder harnesses secured to a lap belt quick disconnect fitting. PULL lap belt quick disconnect fitting shoulder harness and lap belts will fall free.

OTHER FACTORS

1. **Special tools/equipment:** Power rescue saw and crash axe.
2. Locations of switches and equipment and emergency procedures may vary for individual aircraft. Crews should be briefed prior to aircraft dispatch.

COMMUNICATIONS PLAN: National Air Tanker frequency – 123-975. This is the frequency used by all air tanker bases, air tankers and air tanker support aircraft during fire fighting operations.

AIR TANKERS OF THIS TYPE:

Radial: 73, 74, 75, 76, 77, 78, 80, 91, 93, 94, 95, 96, 100, 154, 155.

Turbine: 70, 71, 82, 83, 88, 89, 90

USFS AIRCRAFT

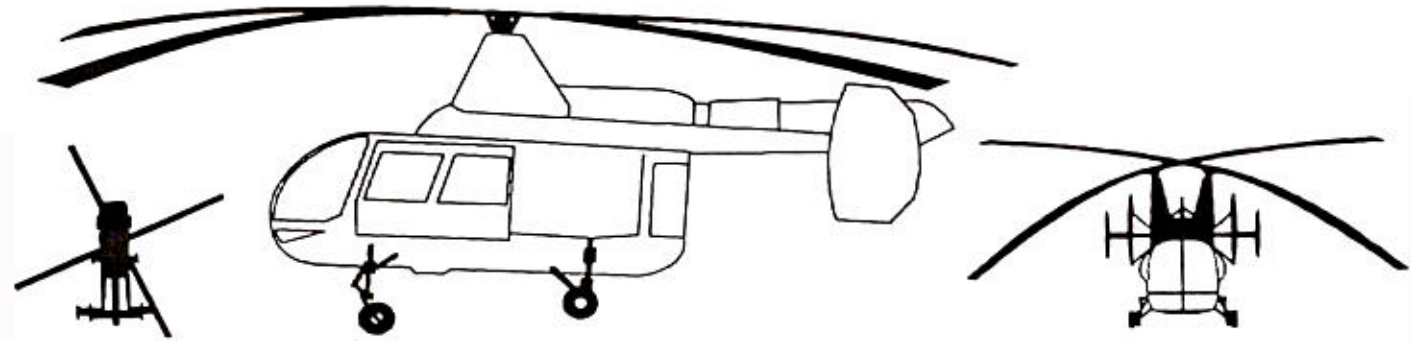
H-43 HUSKIE

AIRCRAFT PRE-FIRE PLAN

AIRCRAFT TYPE: Kaman H-43 Huskie Reference: "Old" T.O. 00-105E-9

AIRCRAFT DESCRIPTION: These helicopter are very rare. They were first built in 1953 with a recip engine. Later versions had turbine engines installed. Kaman's have two intermeshing main rotors and no tail rotor. The main rotors droop very close to ground level and are extremely hazardous to ground personnel when the helicopter is idling. Kaman's are used for petroleum exploration, logging, and occasionally for fire fighting. They were originally designed as a crash rescue helicopter for the US Air Force with the designation of HH-43. **Attached is T.O. 00-105E-9's 1972 version, which may no longer be accurate.**

Length (ft)	Rotor Dia. (ft)	Bucket Size (gals)	Cruise Speed (mph)	Range Loaded (St. miles)	Fuel Consupction (gal/hrs)	Typical Equip. Wt. (lbs.)	Fixed Wt. Reduction (lbs)	Pax Seats	ICS Type
25	47	324	85/98	n/a	85	4300	n/a	8	1



USFS AIRCRAFT

H-43 HUSKIE

HAZARDS

1. 350 gallons / 2345 pounds of jet fuel on-board (fully loaded), located in fuselage, under passenger compartment.
2. One battery located in nose.

APPROACH TO ENTRY POINT (Engines running 80%+)

1. Approach directly from the side, exercising extreme caution around rotors, which can dip very close to the ground.

PRE-DESIGNATED RESCUERMAN ACTIONS

1. GAIN ENTRY
 - a. **Normal entry**
 - I. Rotate exterior knob, located on forward cockpit doors, one each side of fuselage, aft and slide door aft.
 - II. Rotate exterior knob, located on cargo compartment door right fuselage, to aft position, slide door aft.
 - III. Rotate exterior handle, located on aft clamshell doors right of aft clamshell, clockwise, open door outward.
NOTE: Left clamshell door has interior release handle located top center where aft doors join together.
 - b. **Emergency entry**
 - I. Cut or break window.
 - c. **Forcible Entry/Cut-in**
 - I. Cut cabin enclosure as required.
2. ENGINE SHUTDOWN
 - a. Rotate throttle, located on power control handle left side of pilot's seat, clockwise to CUT-OFF position.
 - b. Push in fuel and oil switches, located on upper center console, to OFF position.
 - c. Push in battery switch, located on center console, to OFF position.
 - d. Push auxiliary fuel switch, located on center console, to OFF position.
3. AIRCREW EXTRACTION
 - a. Unlatch lap belts and remove shoulder harness restraint straps.

OTHER FACTORS

1. **Special tools/equipment:** Power rescue saw and crash axe.
2. Location of switches and equipment and emergency shutdown procedures may vary for individual aircraft. Crews should be briefed prior to helicopter dispatch.

COMMUNICATIONS PLAN: National Air Tanker Frequency – 123.975. This is the frequency used by all air tanker bases, air tankers, and air tanker support aircraft during fire fighting operations.

USFS AIRCRAFT

NOTE:

This information is taken from the 1972 edition of T.O. 00-105E-9.

H-43 HUSKIE

SPECIAL TOOLS/EQUIPMENT
 Power Rescue Saw
 Crash Axe (Rescue)

HH-43

AIRCRAFT ENTRY ALL MODELS

1. EMERGENCY ENTRY

- a. Cut or break window.

2. NORMAL ENTRY

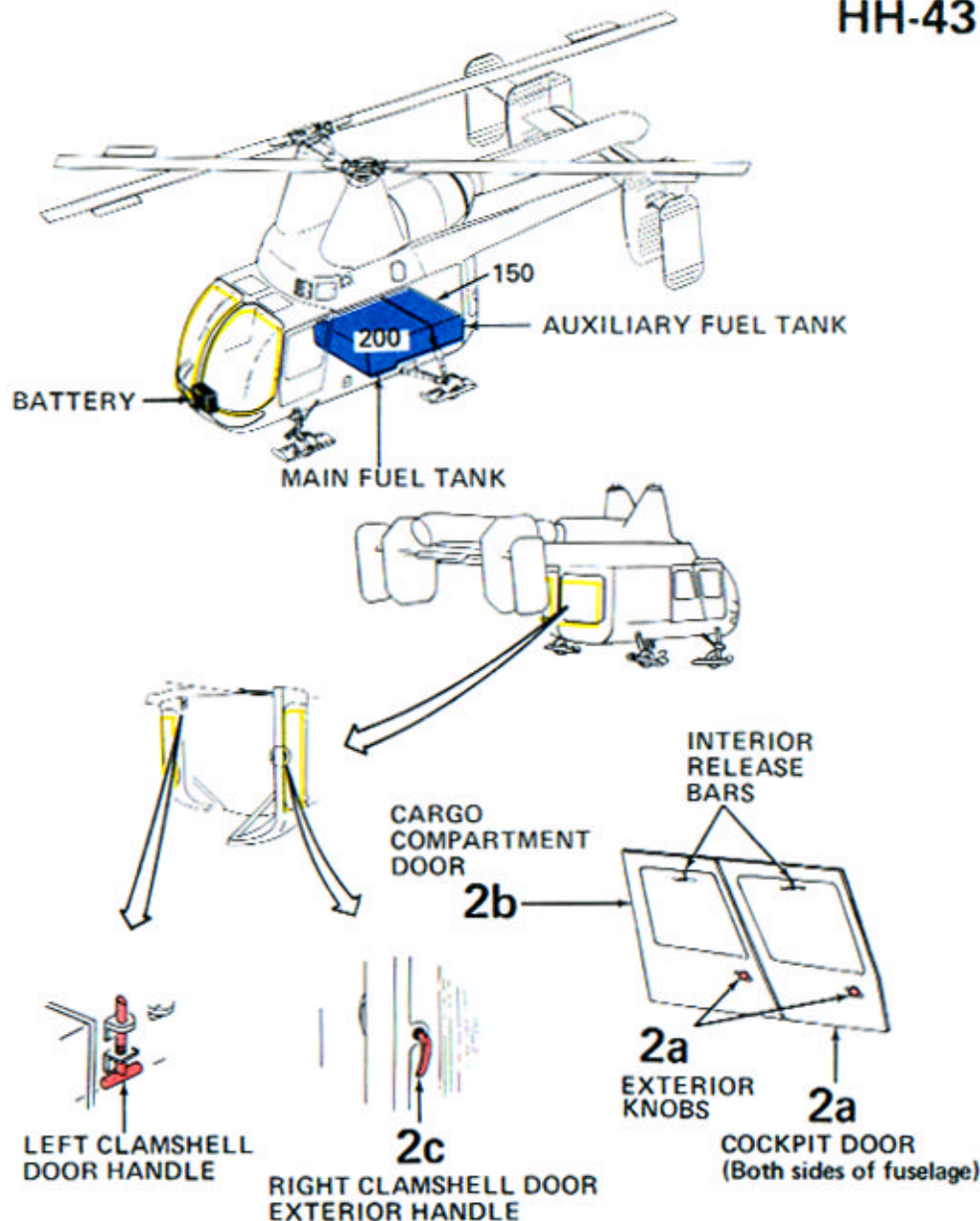
- a. Rotate exterior knob, located on forward cockpit doors 1 each side fuselage, aft and slide doors aft.
- b. Rotate exterior knob, located on cargo compartment door right fuselage, to aft position, slide door aft.
- c. Rotate exterior handle, located on aft clamshell doors right aft clamshell, clockwise open door outward.

NOTE:

Left clamshell door has interior release handle located top center where aft doors join together.

3. CUT-IN

Cut cabin enclosure as required.



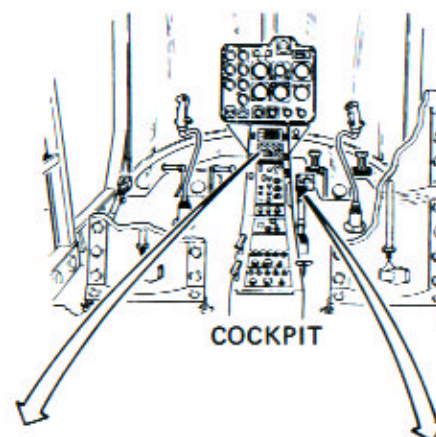
ENGINE SHUTDOWN AND AIRCREW EXTRACTION

1. EMERGENCY SHUTDOWN

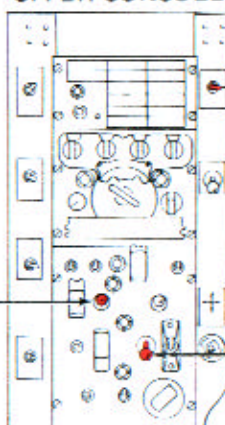
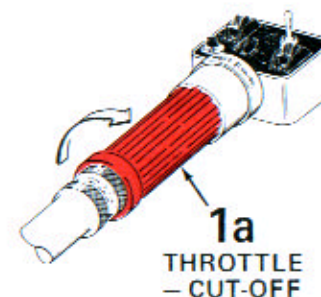
- Rotate throttle, located on power control handle left side of pilot's seat, clockwise to CUT-OFF position.
- Push in fuel and oil switches, located on upper center console, to OFF position.
- Push in battery switch, located on center console, to OFF position.
- Push auxiliary fuel switch, located on center console, to OFF position.

2. AIRCREW EXTRACTION

- Unlatch lap belts and remove shoulder harness restraint straps.



UPPER CONSOLE

BATTERY SWITCH
- OFF 1c1d
AUXILIARY FUEL
SWITCH - OFF1b
FUEL AND OIL
SHUT-OFF SWITCH
- OFF1a
THROTTLE
- CUT-OFF

HH-43

USFS AIRCRAFT

P2V NEPTUNE

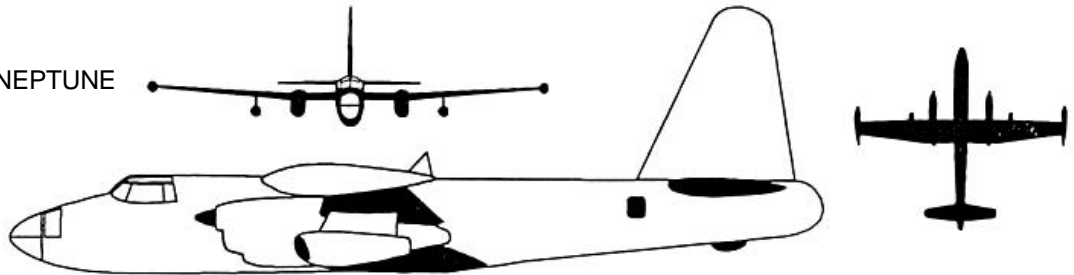
AIRCRAFT PRE-FIRE PLAN

AIRCRAFT TYPE: Lockheed P2V Neptune/SP2H Reference: T.O. 00-105E-9

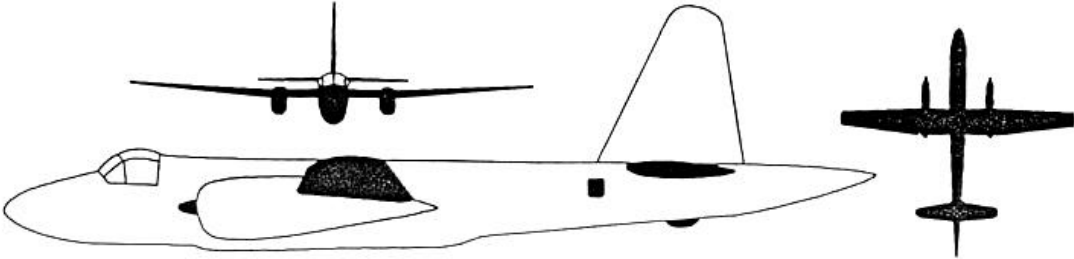
AIRCRAFT DESCRIPTION: There are currently three models of the P-2 being used as airtankers. P2V-5 and P2V-7 Neptune: Built for the U.S.Navy, the Neptune was designed for long range patrol and anti-submarine warfare. It saw active military service until the mid 1960's. Two recip engines powered original versions and later two turbojets were added for take-off assistance. Both engines use the same aviation fuel. The Forest Service was the first to acquire surplus Neptunes and installed the first eight-gate tank on its own machine. As more became available, operators picked them up and the tank and gating system were vastly improved. It is superbly suited for airtanker operations with its two jet engines adding power during take-offs and retardant drops. The P2V-5 and 7 are almost identical in performance with the -7 model is distinguished by a bubble-shaped cockpit. Wing-tip tanks are optional on P2V's. **SP2H:** Introduced as an airtanker in late 1987, this is a modified Lockheed P2V. The jet engines have been removed and two thousand-gallon retardant tank installed with computerized variable flow doors controlling selected retardant coverage level. Removal of the jets was partially offset by a smaller and lighter retardant system. The smaller retardant tank profile, mid-wing and the absence of the jet engines can identify it.

Model	Length (ft)	Wing Span (ft)	Turn Radius (ft)	Cruise Speed (kts/mpg)	Gross Weight (lbs)	Range Loaded (St miles.)	Contract Op. Wt. (lbs.)	Retardant Load (gallons)	Number Gates	ICS Type
SP2H	95	98	71	191/220	67,000	1100	62,000	2000	1	2
P2V	86	98	72	195/225	80,000	1100	73,900	2400	6	2

LOCKHEED P2V NEPTUNE



LOCKHEED SP2H



USFS AIRCRAFT

P2V NEPTUNE

HAZARDS

1. **NOTE: The SP2H is also known as the P2V-7.**
2. 1,400 gallons / 9380 pounds of aviation-gas on-board (fully loaded), located in wings and fuselage. The P2-V will carry more.
3. 1 oxygen cylinder located within reach of crewmembers.
4. Two batteries located in tail section on the aft side of the rear bulkhead inside near the wing root.
5. Propeller danger zone 25 feet
6. Turbine blade failure 300 feet.
7. Engine exhaust 1500 feet.
8. Hydraulic system pressurized to 3000 psi.
9. Engine Oil – 80 gallons stored aft of each engine.
10. Hydraulic fluid – up to 50 gallons.
11. Can fly with one engine shutdown.
12. Circuit breakers: P2V-5 – left side of interior fuselage, aft of entry point. P2V-7 – Left side of fuselage, forward of entry point.

APPROACH TO ENTRY POINT (Engines running 80%+)

1. Approach directly from the nose, avoiding the propellers for a ten-foot radius.

PRE-DESIGNATED RESCUERMAN ACTIONS

1. GAIN ENTRY **NOTE: The SP2H is similar to the P2V-7.**
 - a. **Normal entry –**
 - I. Aft of nose wheel in wheel well. Open door of left side of wheel well. P2V-5 door slides forward. / P2V-7 door is a roll up curtain.
 - II. On P2V-7, rotate yellow handle on aft bulkhead, down to release ladder.
 - b. **Emergency entry –** Open hatch over each crewmember by punching hole in fabric covers between hatches. This gives you access to handle, PULL handle. P2V-5 lift hatch and swing forward. / P2V-7 lift hatch and swing towards centerline of aircraft.
 - c. **Cut-in / Forcible Entry -**
 - I. Cut-in around all hatches and windows.
 - II. Cut-in on top of fuselage.
2. ENGINE SHUTDOWN **NOTE: The SP2H is similar to the P2V-7.**
 - a. Retard engine throttles, located P2V-5 on center pedestal / P2V-7 on center overhead console, full aft.
 - b. Retard jet throttles, located to the right of the main engine throttles, full aft to OFF position. **NOTE:** Emergency jet engine shutdown can be located in various locations.
 - c. Retard fuel mixture control levers, located P2V-5 to the right of the throttles / P2V-7 to the left of the throttles, full aft to CUT OFF
 - d. Fuel switches, located P2V-5 under door in floor between crewmembers, rotate to OFF **NOTE:** Second valve is for hydraulics and this can be rotated as well. / P2V-7 aft of throttles full aft to OFF position.
 - e. Place battery master switch, located on the aft side of the center pedestal to the OFF position.

CAUTION: Magneto switches are located over center dashboard. If left on and propellers are rotated by hand, engines can momentarily attempt to fire. Magnetos should be placed in the OFF position as an added safety measure if time permits.
3. AIRCREW EXTRACTION
 - a. Unlatch lap belt and remove shoulder harness from crewmember(s). If seat track is not damaged during crash landing, use adjustable seat control to move seat in aft position when removing crewmembers.

OTHER FACTORS

1. **Special tools/equipment:** Power rescue saw, 12-foot ladder, and crash axe.
2. Location of switches and equipment and emergency shutdown procedures may vary for individual aircraft. Crews should be briefed before aircraft dispatch.

COMMUNICATIONS PLAN: National Air Tanker frequency – 123.975. This is the frequency used by all air tanker bases, air tankers and air tanker support aircraft during fire fighting operations.

AIR TANKERS OF THIS TYPE:

SP2H: 01, 16, 18. P2V Neptune: 05, 06, 07, 08, 09, 10, 11, 12, 55, 99, 139, 140.

USFS AIRCRAFT

MODEL 90 KING AIR/U-21 UTE

AIRCRAFT PRE-FIRE PLAN

AIRCRAFT TYPE: Model 90 King Air/Beechcraft U-21 Ute

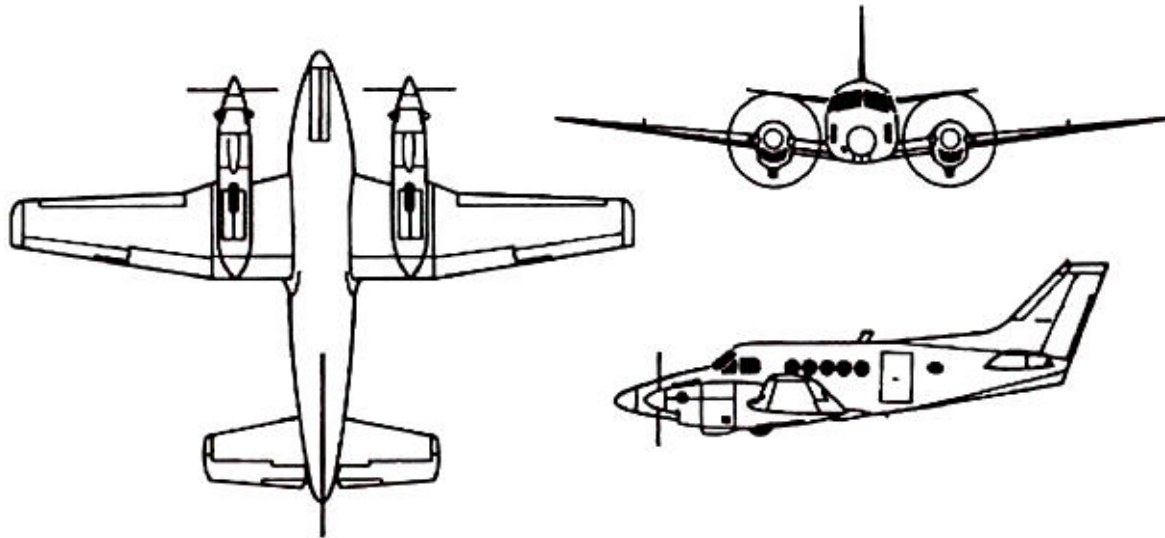
Reference:T.O. 00-105E-9

AIRCRAFT DESCRIPTION: The U-21 is the U.S. Army version of the Beechcraft Model 90 King Air. (The U.S. Navy uses a pressurized version called the T-44A as an advanced pilot trainer.) The rectangular windows distinguish it from the other King Air's. It can carry a crew of two and ten passengers. The U-21 is unpressurized while some models of the King Air can be pressurized. The State of Alaska Department of Natural Resources uses the U-21 in support of fire fighting operations.

Length (ft)	Wing Span (ft)	Bucket Size (gals)	Cruise Speed (mph)	Range Loaded (St. miles)	Gross Weight (lbs.)	Typical Equip. Wt. (lbs.)	Fixed Wt. Reduction (lbs)	Pax Seats	ICS Type
39' 9.5"	45'10.75"	n/a	495/307	1814	n/a	n/a	n/a	2/10	n/a

NOTE:

For more information, refer to Chapters 15 and 24.



USFS AIRCRAFT

MODEL 90 KING AIR/U-21 UTE

HAZARDS

1. 370 gallons / 2479 pounds of turbine fuel on-board (fully loaded), located in wings.
2. One battery located in the top of the right wing, center section and is equipped with a quick disconnect plug.
3. Propeller danger zone 15 feet
4. Engine exhaust - 20 feet.
5. Engine oil – 2.3 gallons per engine.
6. Hydraulic oil – 1 pint per engine.

APPROACH TO ENTRY POINT (Engines running 80%+)

1. Approach directly from the tail, aft of the wing on the left side.

PRE-DESIGNATED RESCUERMAN ACTIONS

1. GAIN ENTRY: NOTE: In the event main door or escape hatches are inaccessible, emergency entry may be gained by breaking through windshield.
 - a. **Normal entry** – Rotate handle, located in center of passenger door on left side of aircraft down, and swing door down. NOTE: The main entrance door may be internally secured in closed position with safety chain. If door will not swing down after being unlatched, cut or break chain.
 - b. **Emergency entry** – NOTE: Emergency escape hatch on right side of fuselage is only accessible on certain models. Some models will have an escape hatch over the cockpit.
 - I. Cut in or break window in escape hatch on right side of fuselage, to gain access to jettison handle, located on inside aft edge of hatch.
 - II. Pull yellow cover, located over jettison handle, down.
 - III. Press release button, located directly beneath jettison handle, in.
 - IV. Pull jettison handle up and pull hatch out.
 - V. Rotate external handle on escape hatch over cockpit, lift hatch off.
 - c. **Cut-in / Forcible Entry** – Cut around frame of window on right hand side of fuselage..
2. ENGINE SHUTDOWN
 - a. Position fuel firewall valve switches, located below the fuel management panel on left side of cockpit, down to OFF.
 - b. Push master switch gang bar, located on left subpanel near left crewmembers right knee, down to OFF position.
 - c. Pull propeller levers, located in center of control pedestal, aft to FEATHER position..
3. AIRCREW EXTRACTION
 - a. Pilot and co-pilot are attached to the seats by shoulder straps attached to the lap belt by a quick disconnect buckle. The passengers have a lap belt only. LIFT buckle cover to release shoulder harness and lap belt.

OTHER FACTORS

1. **Special tools/equipment:** Power rescue saw and crash axe.
2. Aircraft constructed primarily of aluminum.
3. Locations of switches and equipment and emergency procedures may vary for individual aircraft. Crews should be briefed prior to aircraft dispatch.

COMMUNICATIONS PLAN: National Air Tanker frequency – 123-975. This is the frequency used by all air tanker bases, air tankers and air tanker support aircraft during fire fighting operations.

USFS AIRCRAFT

P-3 ORION/ELECTRA L-118

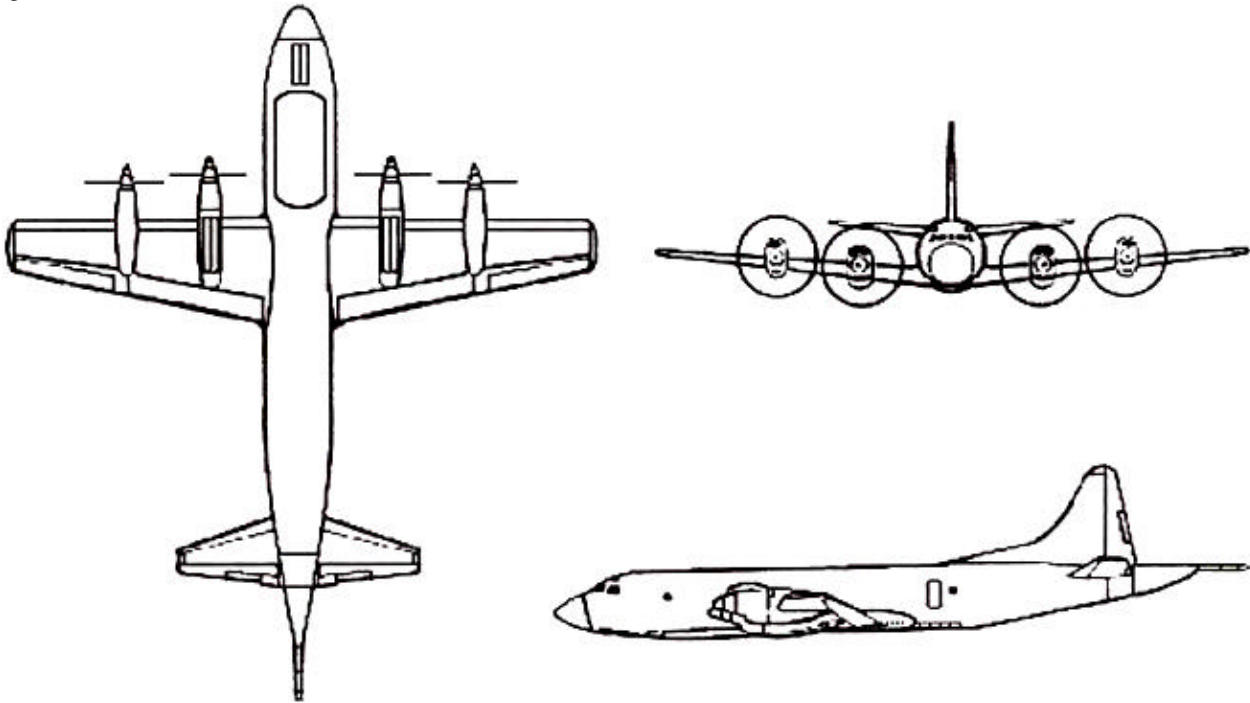
AIRCRAFT PRE-FIRE PLAN

AIRCRAFT TYPE: P-3 Orion/Lockheed Electra L-118 Reference:T.O. 00-105E-9/NAVAIR 00-80R-14-1

AIRCRAFT DESCRIPTION: This is a four-engine turbo-prop, originally for the U.S. Navy primarily for submarine surveillance. The civilian version is the Electra L-118. The turbine engines add reliability and power which gives the P-3A a short take-off roll and a three thousand-gallon retardant load. These are fast aircraft with relatively short turn around times. The P-3 can be identified by the low wing, four turbine engines with four blade propeller and eye brow cockpit windows.

Length (ft)	Wing Span (ft)	Turning Radius (ft)	Cruise Speed (mph)	Range Loaded (St. miles)	Gross Weight (lbs.)	Contract Op. Wt. (lbs.)	Retardant Load (lbs)	Number Gates	ICS Type
106	99	65	275/320	2300	105,000	97,000	3000	1	1

NOTE:
For more information, refer to Chapters 22 and 27.
Chapter 27 idicates other designations.



USFS AIRCRAFT

P-3 ORION/ELECTRA L-118

HAZARDS

1. 6,560 gallons / 44,500 pounds of jet fuel on-board (fully loaded), located in wings.
2. 1 oxygen cylinder located on left side. The valve is located just aft of flight station, on lower left of aft bulkhead.
3. One battery located in nose wheel well.
4. Propeller danger zone 25 feet
5. Turbine blade failure 300 feet.
6. Engine exhaust 1500 feet.
7. APU exhaust 15 feet.
8. Pneumatic system pressurized to 3000 psi.
9. Oil – 8 gallons per engine, Hydraulic fluid 30 gallons of 5606.
10. Aircraft can fly with one engine shutdown as a precaution.
11. Aircraft can experience hot brakes when landing on short runways.

APPROACH TO ENTRY POINT (Engines running 80%+)

1. Approach directly from the left side, aft of the wing, avoiding the propellers for a ten-foot radius.

PRE-DESIGNATED RESCUERMAN ACTIONS

1. GAIN ENTRY
 - a. **Normal entry** – Normal entrance is through AFT cabin door on left-hand side of fuselage. Press button on handle to "pop" out handle. Rotate handle counter clockwise. PUSH door in and slide forward.
 - b. **Emergency entry** – In the event the Main entrance Door is inaccessible, emergency entrance may be gained through:
 - I. Flight station escape hatch, over cockpit.
 - II. Pilot's auxiliary exit, left-hand side of fuselage just AFT of pilot's window.
 - III. Overwing emergency exit hatches, both sides of fuselage.
 - c. **Cut-in** – Cut-in entry on side of fuselage, aft of wing.
2. ENGINE SHUTDOWN
 - a. **PARKING BRAKE:** Set parking brake by depressing toe pedals and pulling parking brake handle, located on left crewmembers dash board, just above steering wheel column, above right knee.
 - b. Pull all four emergency shutdown handles, located on the top of the center dashboard.
 - c. Place APU switch, located center aft of overhead panel, to the OFF position. APUs may be secured externally by a safety switch located on left-hand side of fuselage, under cockpit, forward of the APU. NOTE: The APU Normal/Safe switch also disables the automatic fire extinguisher circuit.
 - d. Battery is located in nose wheelwell. To deactivate battery, remove quick disconnect fitting.
3. AIRCREW EXTRACTION
 - a. Lift quick disconnect lever to release shoulder harnesses and lap belt.

OTHER FACTORS

1. **Special tools/equipment:** Power rescue saw and crash axe.
2. Location of switches and equipment and emergency procedures may vary for individual aircraft. Crews should be briefed prior to aircraft dispatch.

COMMUNICATIONS PLAN: National Air Tanker Base frequency – 123.975. All air tanker bases, air tankers and air tanker support aircraft during fire fighting operations, use this frequency.

AIR TANKER CALL SIGNS: 00, 21, 22, 23, 25, 26, and 27.

USFS AIRCRAFT

PB4Y-2 PRIVATEER

AIRCRAFT PRE-FIRE PLAN

AIRCRAFT TYPE: Consolidated PB4Y-2 Privateer

Reference:T.O. 00-105E-9

AIRCRAFT DESCRIPTION: This World War II airplane was built as a long-range bomber. Several versions were produced with the most obvious difference being the single tail design of the U.S. Navy PB4Y and the double tail U.S. Army B-24. The Navy version was nicknamed the "Privateer". It was surplused by the military and acquired by airtanker operators in the 1960's and has been a mainstay ever since. It was refitted with more powerful engines and designated the Super PB4Y-2. Like other aircraft built in the 1940's, replacement parts are difficult to find and its future as an airtanker is limited. The PB4Y-2 can be identified by the bomber appearance of the nose, outside ladder on the fuselage, high wing, four piston engines and a three-bladed propellers.

Length (ft)	Wing Span (ft)	Turning Radius (ft)	Cruise Speed (mph)	Range Loaded (St. miles)	Gross Weight (lbs.)	Contract Op. Wt. (lbs.)	Retardant Load (lbs)	Number Gates	ICS Type
75	110	68	182/210	520	69,900	57,200	2200	8	2



HAZARDS

1. Two retardant tanks can collapse onto center walkway during crash, creating access problem to cockpit when using normal entry procedures.
2. Engines will smoke when starting.
3. Engine(s) can have an exhaust stack fire caused by a build-up of raw fuel in the exhaust pipe. This will burn itself out and is usually not a hazard.
4. Aircraft can fly with one engine shutdown.
5. 1,600 gallons / 10720 pounds of av-gas on-board (fully loaded), located in wings.
6. Two batteries are located on lower deck, near upper deck access, left side of aircraft interior.
7. Propeller danger zone 25 feet
8. Prop blast – 25 to 50 feet.
9. Pneumatic system pressurized to 1500 psi. Engine Oil – 38 gallons
10. Hydraulic fluid - 15 gallons of 5606, located in the aft portion, right side of flight (upper) deck. Up to 50 gallons including spare fluid. (There is a 1500-psi blowdown bottle located on the left wall, just aft of the pilot's (left) seat. This is used to dump the retardant when all systems have on the aircraft have failed.)
11. NOTE: There is only one hydraulic system, which operates the nose wheel steering, brakes, flaps and lowers the gear!

USFS AIRCRAFT

PB4Y-2 PRIVATEER

APPROACH TO ENTRY POINT (Engines running 80%+)

1. Approach directly from the nose, avoiding the propellers for a ten-foot radius.

PRE-DESIGNATED RESCUERMAN ACTIONS

1. GAIN ENTRY

a. **Normal entry –**

- I. Using ladder mounted on left side of aircraft just forward of the wing, to gain access to the top of the aircraft. There are three emergency hatches located on the top of the fuselage. The hatches located aft of the wing and aft of the cockpit can be opened from the exterior. The hatch forward of the wing (Astro Hatch) can only be opened from the inside. To open exterior hatches, lift up on the handle and allow hatch to swing inwards.

WARNING! Access to this hatch can be extremely dangerous when the engines are running.

b. **Emergency entry –**

- I. Enter through the nose wheel well. Crawl aft to mid-ship area to gain access to the upper deck and cockpit. If aircraft has landed gear-up, force entry through nose bubble.
- II. Break windows in tailcone.

c. **Cut-in –**

- I. Cut around the former top gun turret opening. This is identified from the exterior by a large ring/circle of screws or bolts on the top of the fuselage, just aft of the forward emergency hatch.
- II. In tail section, a hatch is located on the underside of the fuselage. It can not be opened from the exterior. Cut around hatch frame.
- III. Break glass or cut around frames of all hatches and windows.

2. ENGINE SHUTDOWN

- a. Retard all 4 throttles, located in the center of the center pedestal, to the full aft position.
- b. Push all 4 fuel mixture levers, located on the right side of the center pedestal to the full forward position.
- c. Place 4 fire wall shut-off switches, located on the left side of the center pedestal, next to the throttles, in the OFF position by lifting the guard and moving the switch up.
- d. If fire is visible in an engine or the engine fire light is on, lift the guards on all four fire extinguisher switches (break safety wire first), located on the top right side of the dash board, and move the switch(s) to the up position for the appropriate engine(s).
- e. 2 battery switches are located on the right wall, just above the co-pilot's knee on the aft portion of the panel. Place these switches in the down (OFF) position.

3. AIRCREW EXTRACTION

- a. Remove lap belts and shoulder harnesses from crewmembers.

OTHER FACTORS

1. **Special tools/equipment:** Power rescue saw and crash axe.
2. Fire extinguisher located on rear of co-pilot's (right) seat.
3. Location of switches and equipment and emergency shutdown procedures may vary for individual aircraft. Crews should be briefed prior to aircraft dispatch.

COMMUNICATIONS PLAN: National Air Tanker frequency – 123.975. This is the frequency used by all air tanker bases, air tankers and air tanker support aircraft during fire fighting operations.

AIR TANKER CALL-SIGNS: 121, 123, 124, 126, 127.

USFS AIRCRAFT

OV-10 BRONCO

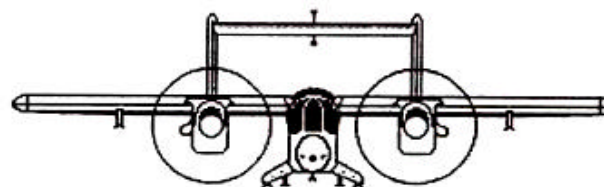
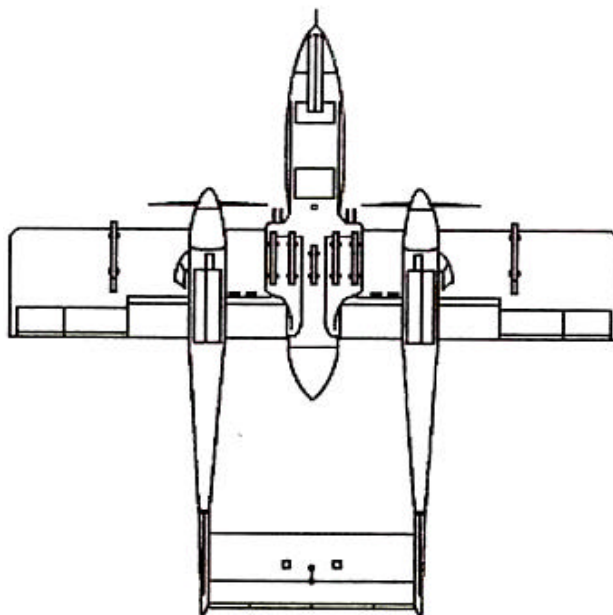
AIRCRAFT PRE-FIRE PLAN

AIRCRAFT TYPE: Rockwell OV-10 Bronco

Reference:T.O. 00-105E-9 and CDF. Info

AIRCRAFT DESCRIPTION: OV-10 Bronco's are owned and operated by the Bureau of Land Management and by the California Department of Forestry. They have a second seat in tandem behind the pilot that may be occupied by an addition crew member. The large windows provide good visibility for the pilot and observer. Bronco's are used primarily as leadplanes but may also be used as Air Tactical Group Supervisor platforms. They are not allowed to fly below 500 feet with Forest Service personnel on board. Bronco's can be fitted with an auxiliary fuel tank for extended range.

Length (ft)	Wing Span (ft)	Turning Radius (ft)	Cruise Speed (mph)	Range Loaded (St. miles)	Gross Weight (lbs.)	Contract Op. Wt. (lbs.)	Payload (lbs)	Number Seats	ICS Type
42	40	n/a	200/238	920/1420	n/a	n/a	3000	1	n/a



HAZARDS

1. 375 gallons / 2512.5 pounds of jet fuel on-board (fully loaded), located in wings and fuselage. Internal 125 gallon auxiliary fuel tank access is through rear cargo door.
2. 1 oxygen cylinder in aft portion of cockpit.
3. Two batteries – Batteries are located in the upper area of each main landing gear wheelwell. Open access cover and remove quick disconnect fitting.
4. Propeller danger zone 15 feet

USFS AIRCRAFT

OV-10 BRONCO

HAZARDS - CONTINUED

5. Engine exhaust 20 - 30 feet.
6. Pneumatic system pressurized to 80 psi.
7. 2.25 gallons of oil per engine.
8. 2.21 gallons of hydraulic fluid per engine. Hydraulic system is pressurized to 1500 psi.

APPROACH TO ENTRY POINT (Engines running 80%+)

1. Approach directly from the nose, avoiding the propellers for a ten-foot radius.

PRE-DESIGNATED RESCUERMAN ACTIONS

1. GAIN ENTRY
 - a. **Normal entry / Emergency entry**
WARNING: With engines running, rescue access to aft cockpit is not possible. Secure engines from forward cockpit prior to entry.
 - I. Rotate pilot's cockpit canopy door handle, located on right and left side of fuselage, clockwise 90 degrees on right side and counter clockwise 90 degrees on left side. NOTE: Bungee will hold canopy open on right side only.
 - II. Rotate observer's cockpit canopy door handle, located on right and left side of fuselage aft of pilot's cockpit, right side clockwise and left side counter clockwise. NOTE: Bungee will hold canopy open on right side only.
 - III. Rotate cargo compartment door external handle, located on aft side of fuselage, counterclockwise, pull door open.
 - b. **Cut-In**
 - I. Cut acrylic plastic canopy next to canopy frame for pilot and observer.
 - II. Cut aft of cargo doorframe to gain access to cargo compartment.
2. ENGINE SHUTDOWN
 - a. **Emergency Engine Shutdown**
WARNING! With engines running, rescue access to aft cockpit is not possible. Secure engines from forward cockpit prior to entry.
 - I. Pull fire warning T-handle, located right upper instrument panel, out.
 - II. Retard condition levers, located left console both cockpits, full aft to FEATHER AND FUEL SHUTOFF POSITION.
 - III. Push battery switch, located left console just forward of power levers, to OFF position.
 - b. **Normal Engine Shutdown**
 - I. Retard power levers, located left console both cockpits to GROUND IDLE.
 - II. Retard condition levers, located left console both cockpits, aft to FUEL SHUT-OFF position.
 - III. Place fuel emergency shut-off switches, located right forward console, in SHUT-OFF position.
 - IV. Push battery switch, located left console just forward of power levers, to OFF position.
3. AIRCREW EXTRACTION
 - a. Unlatch lap belt and remove shoulder harness from crewmember(s). If seat track is not damaged during crash landing, use adjustable seat control to move seat in aft position when removing crewmembers.

OTHER FACTORS

1. **Special tools/equipment:** Power rescue saw and crash axe.
2. Location of switches and equipment and emergency shutdown procedures may vary for individual aircraft. Crews should be briefed prior to aircraft dispatch.

COMMUNICATIONS PLAN: National Air Tanker frequency – 123.975. This is the frequency used by all air tanker bases, air tankers, and air tanker support aircraft during fire fighting operations.

USFS AIRCRAFT

S-64 SKYCRANE/CH-54

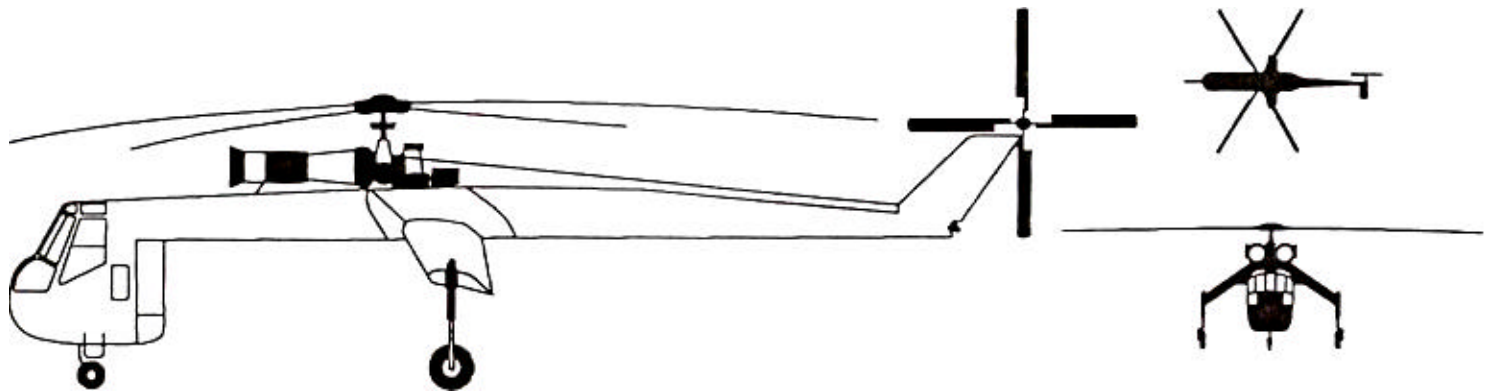
AIRCRAFT PRE-FIRE PLAN

AIRCRAFT TYPE: Sikorsky S-64 Skycrane/CH-54 Reference: T.O. 00-105E-9

AIRCRAFT DESCRIPTION: The S-64 was originally designed for the military and had interchangeable pods that fit underneath for troop transport, cargo, minesweeping, and field hospital. It is powered by twin turbine engines and holds altitude records including a flight to 31,480 feet with a 4,400-pound payload. The Crane has a large bucket and can make quick turnarounds. Although the cost to operate per hour is high, the quantity of water or retardant delivered make it economical to operate. It requires a crew of two and has a third pilot facing rearward for precision sling work. Skycranes have been modified to carry a 2000-gallon tank that can be filled through a draft hose with a pump on the end in less than a minute while the helicopter hovers over a water source. Skycranes are limited to operations under a 10,000-foot density altitude. Data below is a specific version. Other versions may vary considerably in lifting capability.

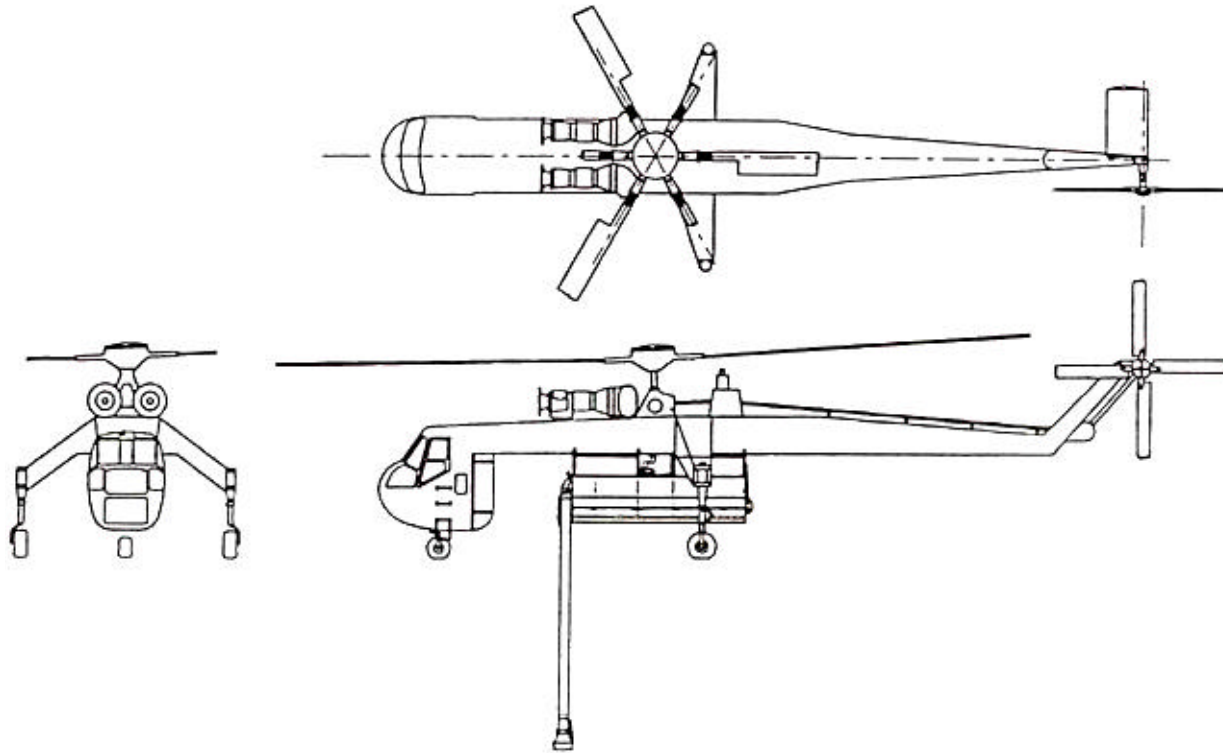
Length (ft)	Rotor Dia. (ft)	Bucket Size (gals)	Cruise Speed (mph)	1.5 Hour Fuel Load (gals)	Fuel Consupction (gal/hrs)	T ypical Equip. Wt. (lbs.)	Fixed Wt. Reduction (lbs)	Pax Seats	ICS Type
89	72	2000	80/92	750	500	20,000	n/a	n/a	1

NOTE:
For more information, refer to Chapter 13.



USFS AIRCRAFT

S-64 SKYCRANE/CH-54

**HAZARDS**

1. 1353 gallons / 9065.1 pounds of jet fuel on-board (fully loaded), located in wings and fuselage.
2. One battery located in nose of aircraft in compartment under left side crewmembers window.
3. Rotor danger.
4. Turbine blade failure 300 feet.
5. Engine exhaust 12 feet.
6. APU exhaust 15 feet.
7. Pneumatic system pressurized to 3000 psi.
8. Not uncommon to make immediate emergency landing for a "Chip Light" (senses metal in oil).

APPROACH TO ENTRY POINT (Engines running 80%+)

1. Approach directly from the side, avoiding the rotors that may dip towards the ground.

USFS AIRCRAFT

S-64 SKYCRANE/CH-54

PRE-DESIGNATED RESCUER ACTIONS

1. **GAIN ENTRY**
 - a. **Normal entry –**
 - I. Rotate entrance handle, located on aft edge of pilot's and copilot's entrance door, swing door OUT.
 - II. Rotate entrance handle, located on aft edge of rear cockpit entrance door on right side of crew compartment, swing door out.
 - b. **Emergency entry –**
 - I. Rotate emergency jettison release handle, located at forward lower corner of pilot's and copilot's entrance door, PULL door out.
 - II. Rotate emergency jettison release handle, located at forward lower corner of rear cockpit entrance door on right side of crew compartment, PULL door out.
 - c. **Cut-in –** Cut around windows.
2. **ENGINE SHUTDOWN**
 - a. **Emergency Shutdown -**
 - I. NOTE: N1 levers have a detent in GRD IDLE (ground idle) position. To pass through the detent to SHUT-OFF position, PULL out on levers. Place N1 levers, located on overhead control quadrant, to SHUT-OFF position.
 - II. Place ignition switches, located in center panel of center console, to OFF position.
 - III. Place battery switch, located in center panel of center console, to OFF position.
 - b. **Normal Shutdown -**
 - I. NOTE: N1 levers have a detent in GRD IDLE (ground idle) position. To pass through the detent to SHUT-OFF position, PULL out on levers. Place N1 levers, located on overhead control quadrant, to SHUT-OFF position.
 - II. Place fuel valve shut-off handle, located on overhead quadrant, in CLOSED position.
 - III. Place fuel booster pump switches, located in upper panel of center console, to OFF position.
 - IV. Place ignition switches, located in center panel of center console, to OFF position.
 - V. Place battery switch, located in center panel of center console, to OFF position.
3. **AIRCREW EXTRACTION**
 - a. Unlatch lap belts and remove shoulder harness from crewmember(s).

OTHER FACTORS

1. **Special tools/equipment:** Power rescue saw and crash axe.
2. Location of switches and equipment and emergency shutdown procedures may vary between individual aircraft. Crews should be briefed prior to dispatch.

COMMUNICATIONS PLAN: National Air Tanker Frequency – 123.975. This is the frequency used by all air tanker bases, air tankers, and air tanker support aircraft during fire fighting operations.

AIR TANKER CALL-SIGNS: Sky cranes with fixed tanks will use 700 series numbers. 741, 742, 743, 744, 745, 746, 747, 748, 794, 796.

USFS AIRCRAFT

1. NORMAL ENTRY

NOTE:

Location of switches and equipment and emergency shutdown procedures may vary for individual aircraft. Crews should be briefed prior to helicopter dispatch.

- Rotate entrance handle, located on aft edge of pilot's and co-pilot's entrance door, swing door outward.
- Rotate entrance handle, located on aft edge of rear cockpit entrance door on right side of crew compartment, swing door outward.
- Rotate entrance handle, located on aft edge of POD access doors, swing door outward.

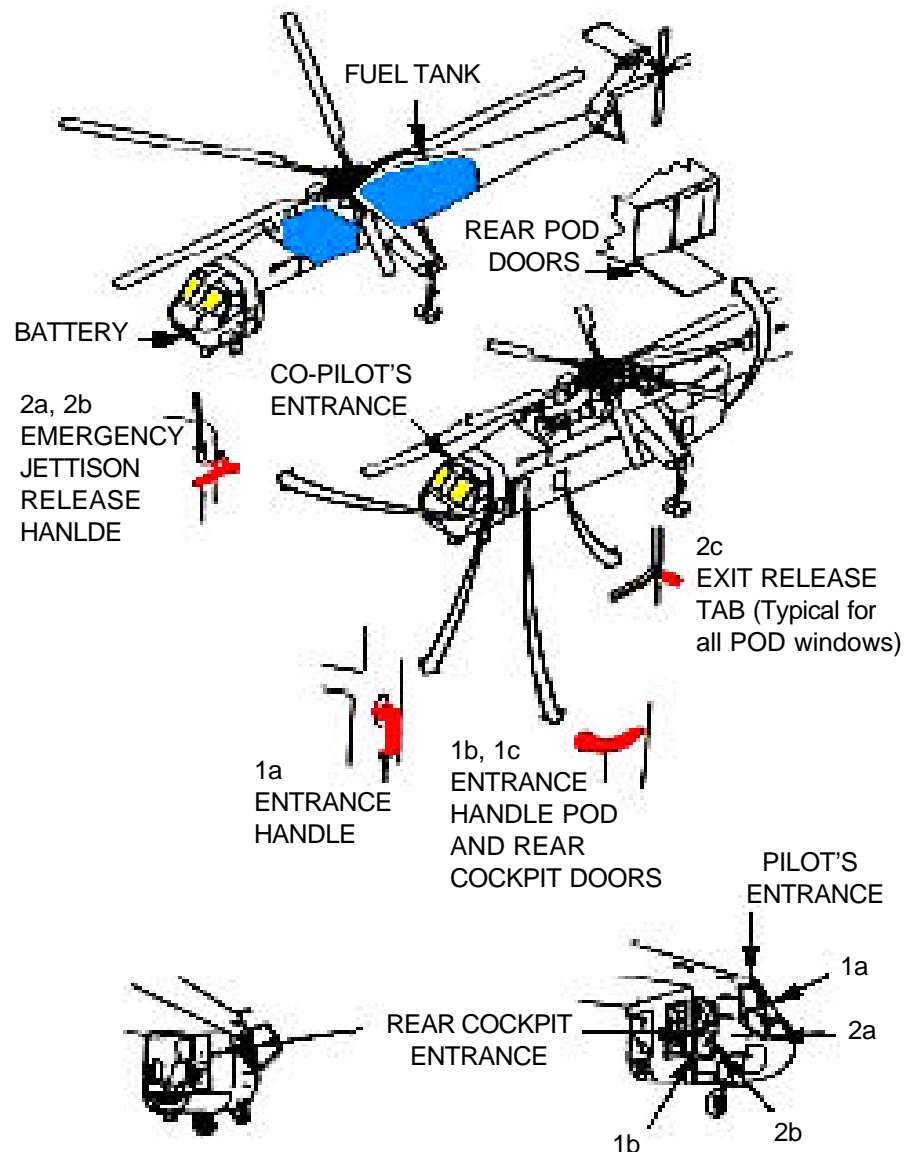
2. EMERGENCY ENTRY

- Rotate emergency jettison release handle, located at forward lower corner of pilot's and co-pilot's entrance door, pull door outward.
- Rotate emergency jettison release handle, located at forward lower corner of rear cockpit entrance door on right side of crew compartment, pull door outward.
- Pull exit release tab, located lower aft corner of each POD window, out and remove window.

3. CUT-IN

- Cut around windows and access doors of POD as marked.

S-64 SKYCRANE/CH-54



USFS AIRCRAFT

S-70/UH-60

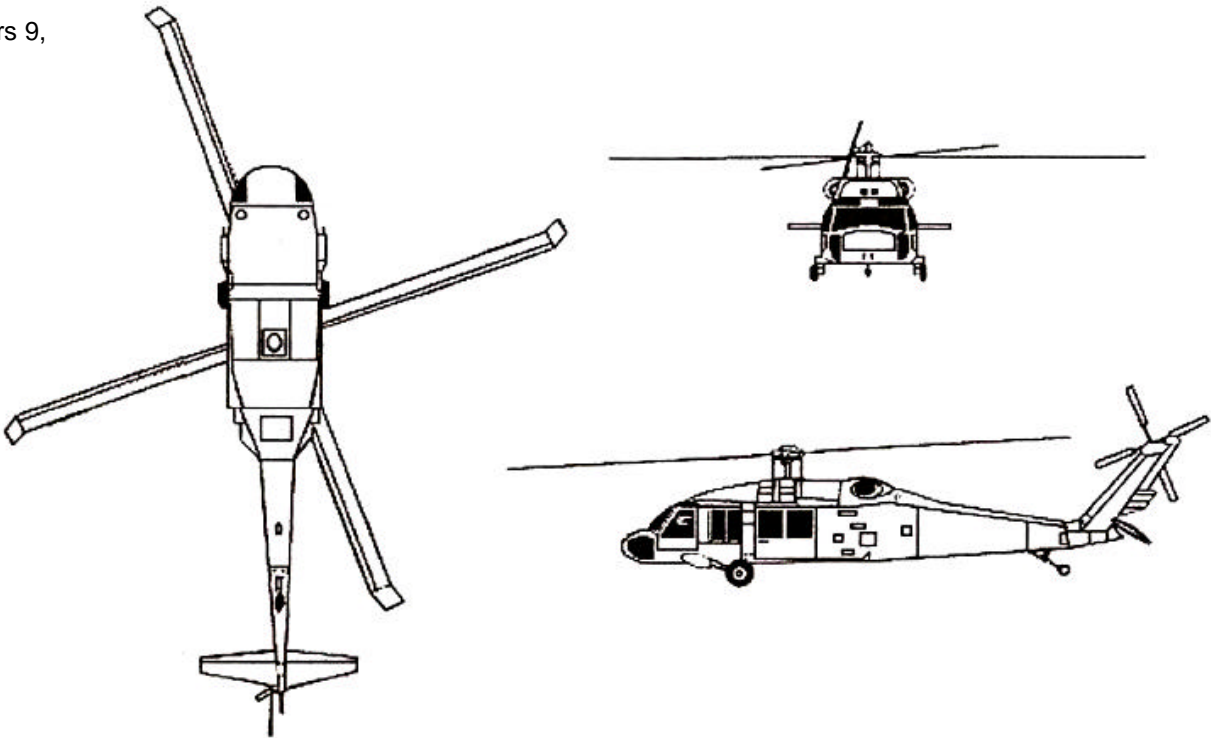
AIRCRAFT PRE-FIRE PLAN

AIRCRAFT TYPE: Sikorsky S-70/UH-60
Reference: T.O. 00-105E-9, NAVAIR 00-80R-14-1 and Interagency Helicopter Operations Guide

AIRCRAFT DESCRIPTION: These aircraft are currently operated only by the military for personnel and cargo transport. (Sikorsky has done some experimenting with a Black Hawk modified for aerial fire fighting called the Fire Hawk.) It is a complex aircraft with special maintenance requirements. They are rarely seen on incidents since the military isn't used until contract aircraft unavailable. They are too large and complex for many of our operations and need a large helibase with large pads and plenty of seperation for takeoffs and landings. The rotor-wash is comparable to heavy-lift helicopters.

Length (ft)	Rotor Dia. (ft)	Bucket Size (gals)	Cruise Speed (mph)	1.5 Hour Fuel Load (gals)	Fuel Consupction (gal/hrs)	Typical Equip. Wt. (lbs.)	Fixed Wt. Reduction (lbs)	Pax Seats	ICS Type
65	54	660	145/167	187	125	n/a	n/a	14 - 17	1

NOTE:
For more information, refer to Chapters 9, 13 and 25.



USFS AIRCRAFT

S-70/UH-60

HAZARDS

1. 614 gallons / 4113.8 pounds of jet fuel on-board (fully loaded), located in fuselage and under passenger compartment.
2. One battery located on cabin floor behind co-pilot.
3. Inlet suction danger area is 4 feet.
4. Turbine blade failure area – 300 feet.
5. Engine exhaust – 30 feet.
6. APU exhaust – 4 feet.
7. Rotor minimum ground clearance – Main = 7 feet 6 inches. Tail = 6 feet 8 inches. (The main rotor disc diameter is 53 feet 8 inches and the tail rotor disc diameter is 11 feet.)
8. Two pneumatic system pressurized to 1250 and 3200 psi.
9. Engine oil – 3.8 gallons
10. Hydraulic oil – 3.9 gallons
11. Transmission oil – 8.15 gallons

APPROACH TO ENTRY POINT (Engines running 80%+)

1. Approach directly from the side, exercising extreme caution around rotors, which can dip to within four feet of the ground.

PRE-DESIGNATED RESCUERMAN ACTIONS

1. GAIN ENTRY
 - a. **Normal entry**
 - I. Turn cockpit door handle counterclockwise to OPEN position to open door.
 - II. Turn cabin door handle counterclockwise to the OPEN position and slide door aft.
 - b. **Emergency entry**
 - I. Break window in cockpit door and pull jettison lever aft to release door hinges.
 - II. Break window in cabin door and rotate emergency handle, located below each window, to the aft OPEN position. Rotate bottom of window out to remove window.
 - c. **Forcible Entry/Cut-in**
 - I. Break window or windshield as required.
 - II. Cut around windows.
2. ENGINE SHUTDOWN – NOTE: To activate the installed fire extinguishing system, one T-handle must be pulled (agent is discharged to last T-handle pulled). Then reposition the fire extinguisher switch from OFF to MAIN or RESERVE. Battery switch must be in the ON position.
 - a. Pull engine emergency T-handles, located on center overhead control quadrant, FULL AFT.
 - b. PULL APU T-handle, located on upper console (aft of T-handles) DOWN.
 - c. Place battery switch, located on upper console (near APU T-handle), to the OFF position.
3. AIRCREW EXTRACTION
 - a. The pilot, co-pilot, crewman, and instructor / passenger are attached to the seats by a complete lap belt and dual torso-restraint shoulder harness attached to a rotary release buckle.
 - b. All troop seats have a lap belt and shoulder harness attached to a rotary release buckle.
 - I. ROTATE Rotary Release Buckle in either direction, to release shoulder harnesses and lap belt.

OTHER FACTORS

1. **Special tools/equipment:** Power rescue saw and crash axe.
2. Locations of switches and equipment and emergency shutdown procedures may vary for individual aircraft. Crews should be briefed prior to helicopter dispatch.

COMMUNICATIONS PLAN: National Air Tanker Frequency – 123.975. This is the frequency used by all air tanker bases, air tankers, and air tanker support aircraft during fire fighting operations.

USFS AIRCRAFT

1. NORMAL ENTRY - ALL MODELS

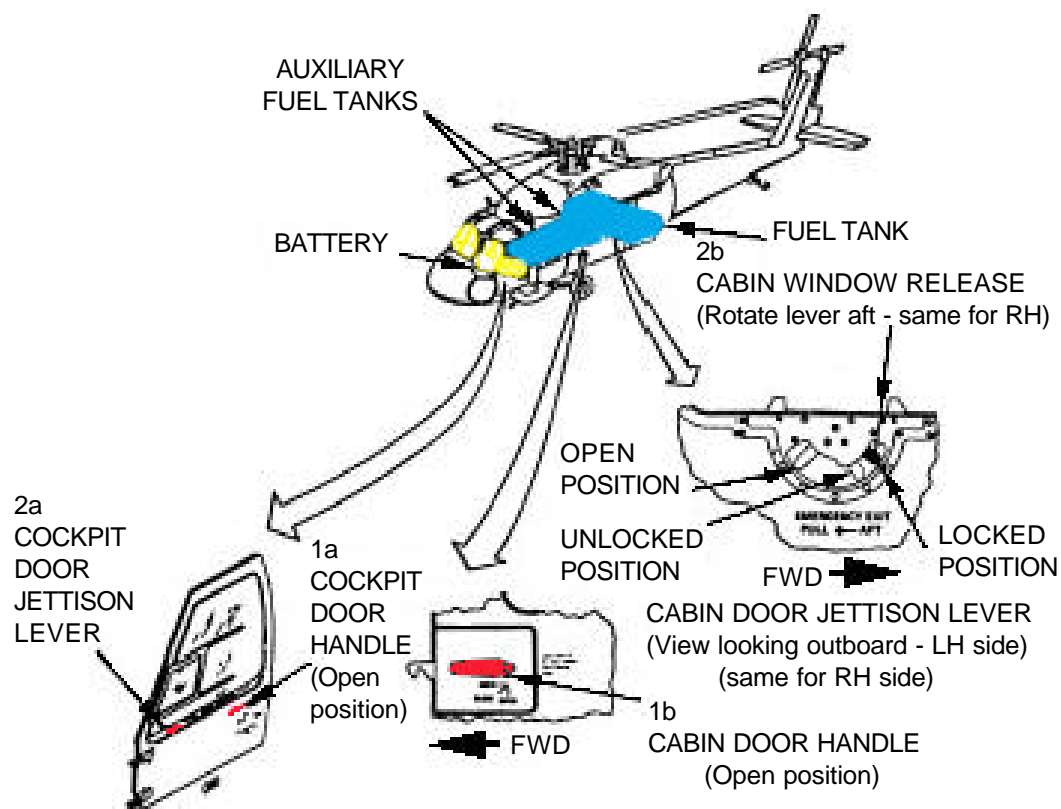
NOTE:

Location of switches and equipment and emergency shutdown procedures may vary for individual aircraft. Crews should be briefed prior to helicopter dispatch.

- a. Turn cockpit door counterclockwise to the OPEN position to open door.
- b. Turn cabin door counterclockwise to the OPEN position and slide door aft.

2. EMERGENCY ENTRY

- a. Break window in cockpit door and pull jettison lever aft to release door hinges.
- b. Break window in cabin door and rotate emergency handle, located below each window, to the aft OPEN position, rotate bottom of window to remove window.



USFS AIRCRAFT

S-70/UH-60

1. ENGINE SHUTDOWN

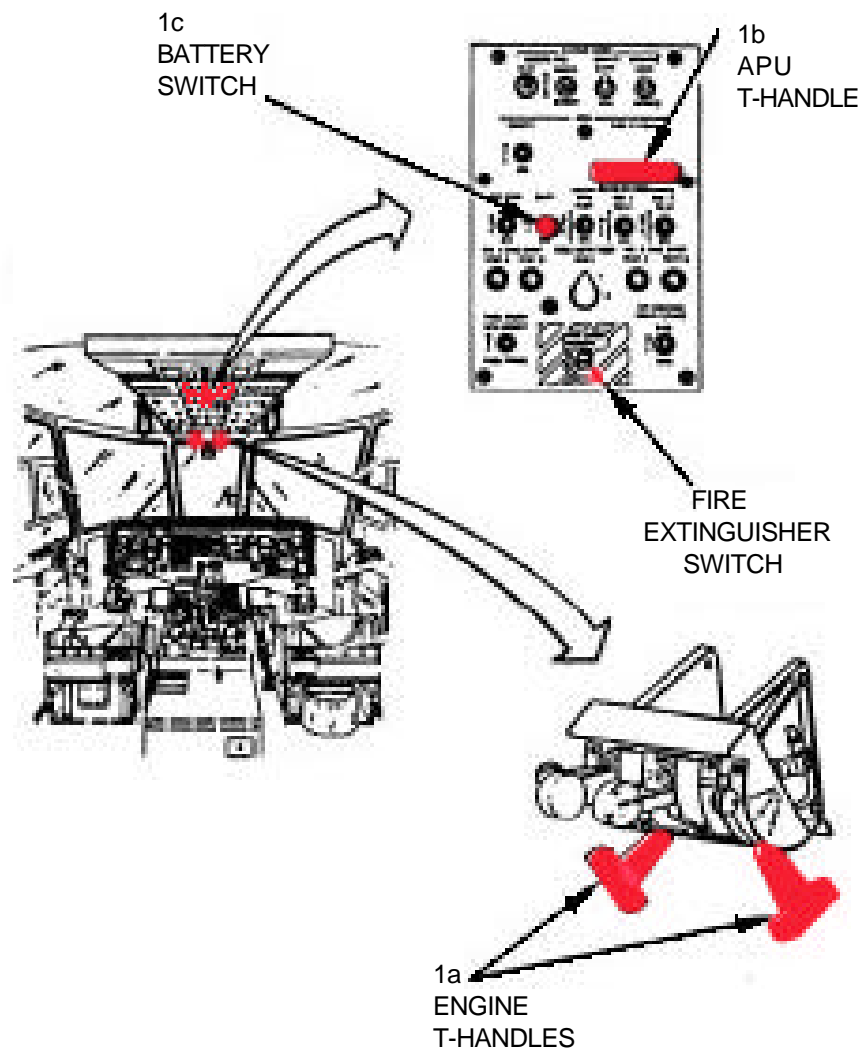
NOTE:

Location of switches and equipment and emergency shutdown procedures may vary for individual aircraft. Crews should be briefed prior to helicopter dispatch.

- a. Full engine emergency T-handles, located on control quadrant, full aft.
- b. Pull APU T-handle located on upper console, down.
- c. Place battery switch, located on upper console, to the OFF position.

2. AIRCREW AND TROOP EXTRACTION

- a. All aircrew seats have a complete lap belt and dual torso restraint shoulder harness attached to a rotary release buckle. Rotate buckle to release restraints.
- b. All troop seats have a lap belt and shoulder harness attached to a rotary release buckle. Rotate buckle to release restraints.



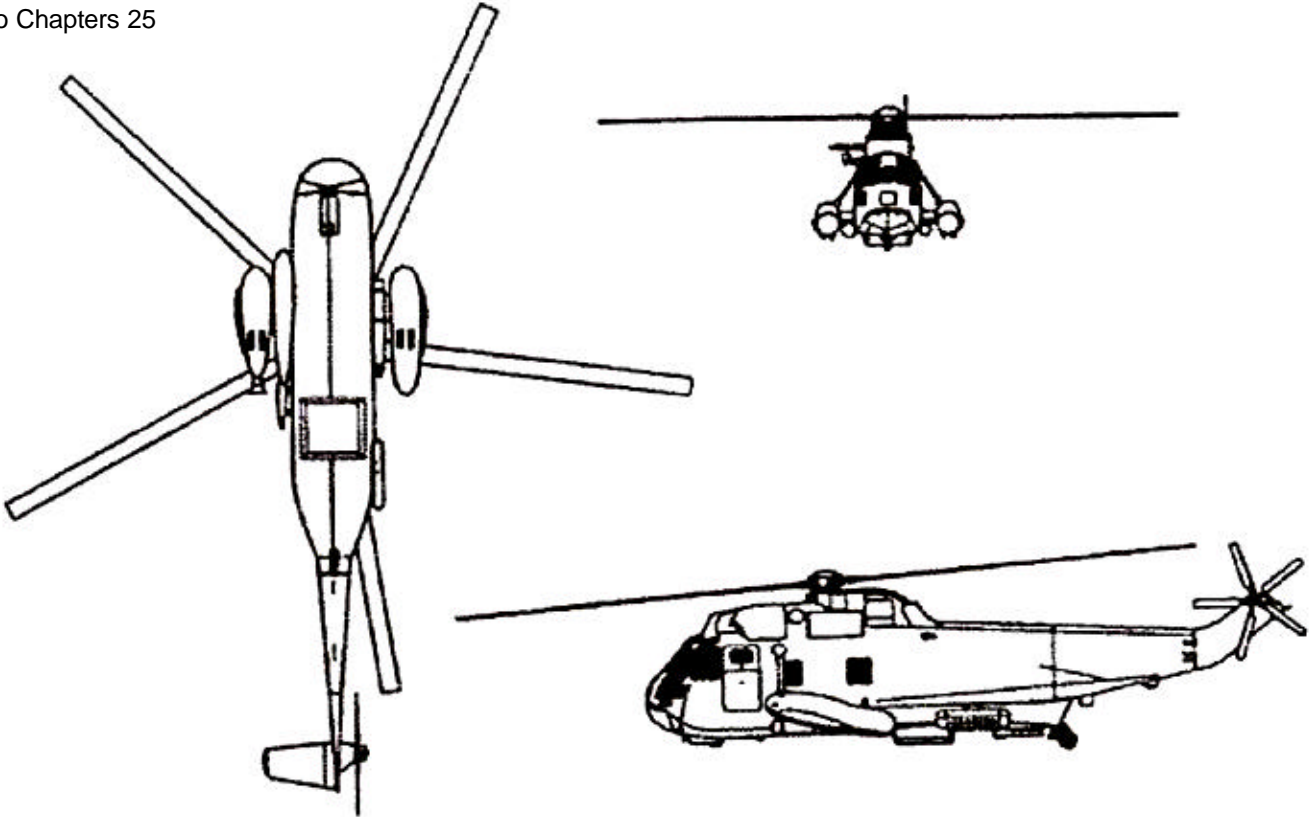
AIRCRAFT PRE-FIRE PLAN

AIRCRAFT TYPE: SH-3 Sea King/Sikorsky S-61N Reference: T.O. 00-105E-9, NAVAIR 00-80R-14-1

AIRCRAFT DESCRIPTION: The S-61N is a fairly common helicopter that requires a crew of two. Originally it was designed to be amphibious. There are models such as the SH-3 Sea King and HH-3 Pelican or Jolly Green Giant, and the non-amphibious S-61L. S-61N's are used for logging and occassionally used on fire incidents.

Length (ft)	Rotor Dia. (ft)	Bucket Size (gals)	Cruise Speed (mph)	1.5 Hour Fuel Load (gals)	Fuel Consumption (gal/hrs)	Typical Equip. Wt. (lbs.)	Fixed Wt. Reduction (lbs)	Pax Seats	ICS Type
73	62	900	120/138	210	160	12,600	n/a	n/a	1

NOTE:
For more information, refer to Chapters 25
and 30.



USFS AIRCRAFT

SH-3 SEA KING/S-61N

HAZARDS

1. 1548 gallons / 10371.6 pounds of jet fuel on-board (fully loaded), located in fuselage.
2. One battery located in the nose section forward of the pilots compartment and is accessible from the outside.
3. Inlet suction danger area is 4 feet.
4. Turbine blade failure
5. Engine exhaust –20 feet.
6. APU exhaust –20 feet.
7. Rotor minimum ground clearance – Main = 9 feet 1 inches. Tail = 6 feet 6 inches. (The main rotor disc diameter is 62 feet and the tail rotor disc diameter is 10 feet 6 inches.)
8. Pneumatic system pressurized to 3000 psi.
9. Engine oil – 5.4 gallons
10. Hydraulic oil – 2 gallons
11. Transmission oil – 11 gallons

APPROACH TO ENTRY POINT (Engines running 80%+)

1. Approach directly from the side, exercising extreme caution around rotors, which can dip to within four feet of the ground.

PRE-DESIGNATED RESCUERMAN ACTIONS

1. GAIN ENTRY
 - a. **Normal entry**
 - I. Enter through the personnel door on the left-hand side of the aircraft. The upper door may be opened at center of door below window by turning handle. To open, PUSH forward part of handle and turn counterclockwise. NOTE: On helicopters not modified, the upper door handle is located in well at AFT bottom of window.
 - II. The lower door may be opened by turning handle at center of door. To open, PUSH forward part of handle, turn counterclockwise and PULL door open.
 - b. **Emergency entry** – For emergency access, cabin windows, cabin doors and pilot/co-pilot's jettisonable windows may be opened from the outside.
 - I. Cabin windows are equipped with a pull-tab, lower AFT corner. To open, PULL tab and PUSH panel INWARD. NOTE: Left gunner's window on the HH-3A can be jettisoned by rotating handle counterclockwise.
 - II. To gain access through the window in the cabin door (right-hand side of aircraft), TURN handle (lower AFT corner) clockwise and PULL. NOTE: The UH-3A has two cabin doors, one each side of aircraft. Right hand door operates as described. Left hand door upper section opens by turning handle FORWARD.
 - III. To jettison pilot / co-pilot windows, PRESS handle to extend then TURN handle counterclockwise and PULL window outward.
 - IV. Upper half of personnel door may be removed by rotating handle DOWN.
 - V. PULL ramp release handle, located on tail pylon under cover, DOWN. Ramp will open by it's own weight.
 - c. **Forcible Entry/Cut-in** – Windows are made of acrylic plastic and may be cut using a power rescue saw or crash axe. Areas marked on fuselage CUT HERE also may be cut for access. Cut along window frames and marked fuselage entry areas only.

USFS AIRCRAFT

SH-3 SEA KING/S-61N

PRE-DESIGNATED RESCUERMAN ACTIONS - CONTINUED

2. ENGINE SHUTDOWN – Engine may be shutdown by engine speed selector levers fuel shutoff handles located on the center overhead control panel.
 - a. Engine Speed Selector Levers: place selector levers, located on overhead panel, in SHUTOFF position by PULLING speed handles AFT. NOTE: A limit or friction control prevents inadvertent retarding of speed selector below ground idle. PULLING speed selector down bypasses this stop.
 - b. PULL emergency T-handles, located on overhead panel, DOWN.
 - c. Place battery switch, located on overhead panel, in OFF position.
3. AIRCREW EXTRACTION
 - a. The pilot, co-pilot and crew chief are attached to the seat by shoulder harnesses secured to a lap belt equipped with a quick disconnect buckle. Passengers have lap belts only.
 - I. Crewmember restraints – LIFT quick disconnect lever to release shoulder harness and lap belt.
 - II. Passenger restraints – LIFT buckle to release lap belt (airline type).

OTHER FACTORS

1. **Special tools/equipment:** Power rescue saw and crash axe.
2. Location of switches and equipment and emergency shutdown procedures may vary for individual aircraft. Crews should be briefed prior to helicopter dispatch.

COMMUNICATIONS PLAN: National Air Tanker Frequency – 123.975. This is the frequency used by all air tanker bases, air tankers, and air tanker support aircraft during fire fighting operations.

USFS AIRCRAFT

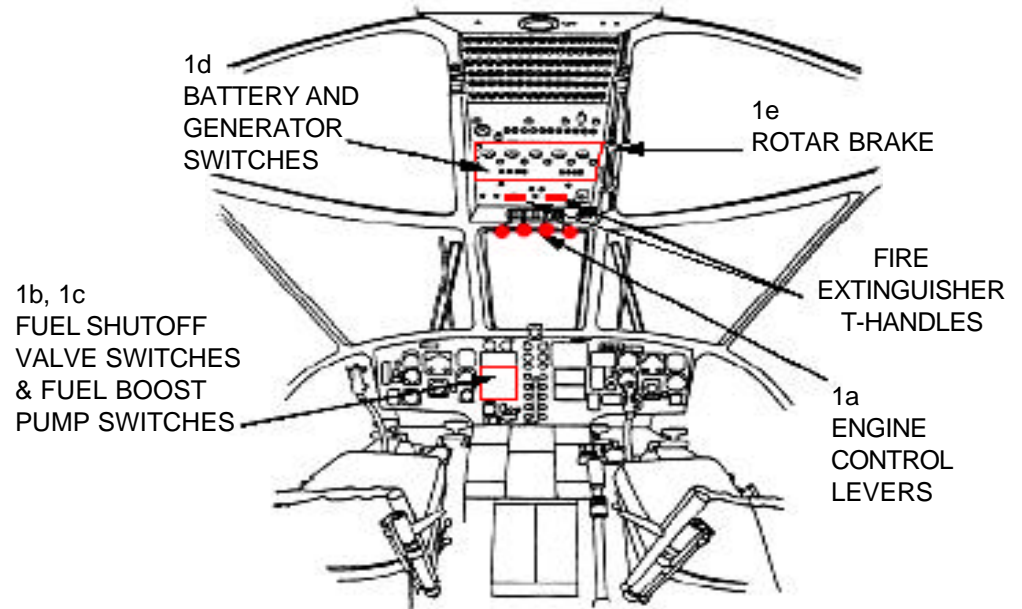
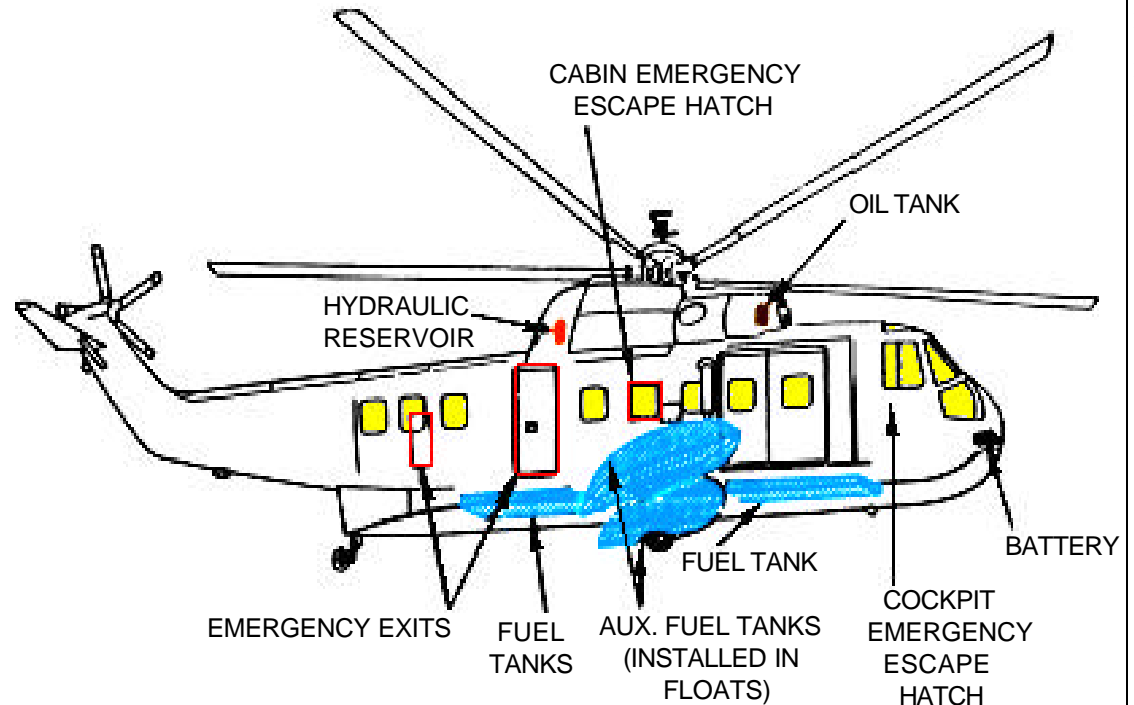
NOTE:

Location of switches and equipment and emergency shutdown procedures may vary for individual aircraft. Crews should be briefed prior to helicopter dispatch.

1. ENGINE SHUTDOWN

- a. Pull engine control levers, located on the center overhead forward panel, aft and then down to clear detent at end of arc. This is the OFF position.
- b. Close the fuel shut off valve switches, located on the center of instrument panel.
- c. Place the fuel boost pump switches, located on the center of the instrument panel, to the OFF position.
- d. Battery and generator switches, located on the overhead switch panel, to the OFF position.
- e. If rotor blades are turning: Pull the red handle rotor brake, located on the overhead switch panel RH side, down and forward to the ON position.

SH-3 SEA KING/S-61N



USFS AIRCRAFT

SHORTS SD 330/C-23A SHERPA

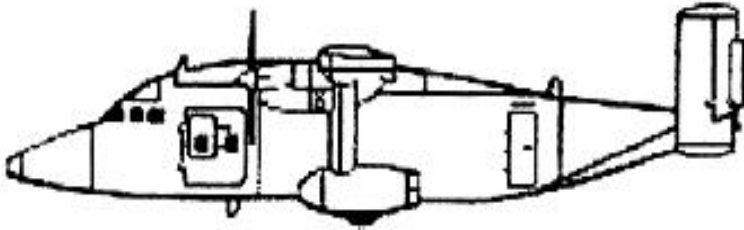
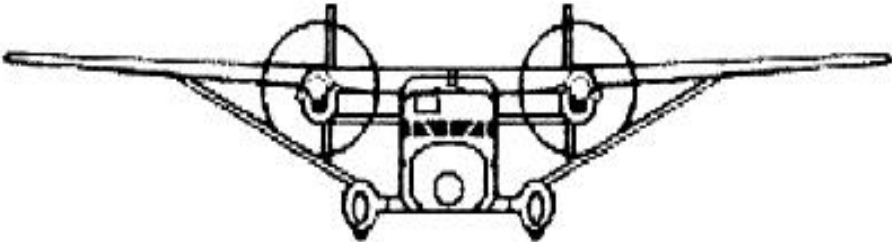
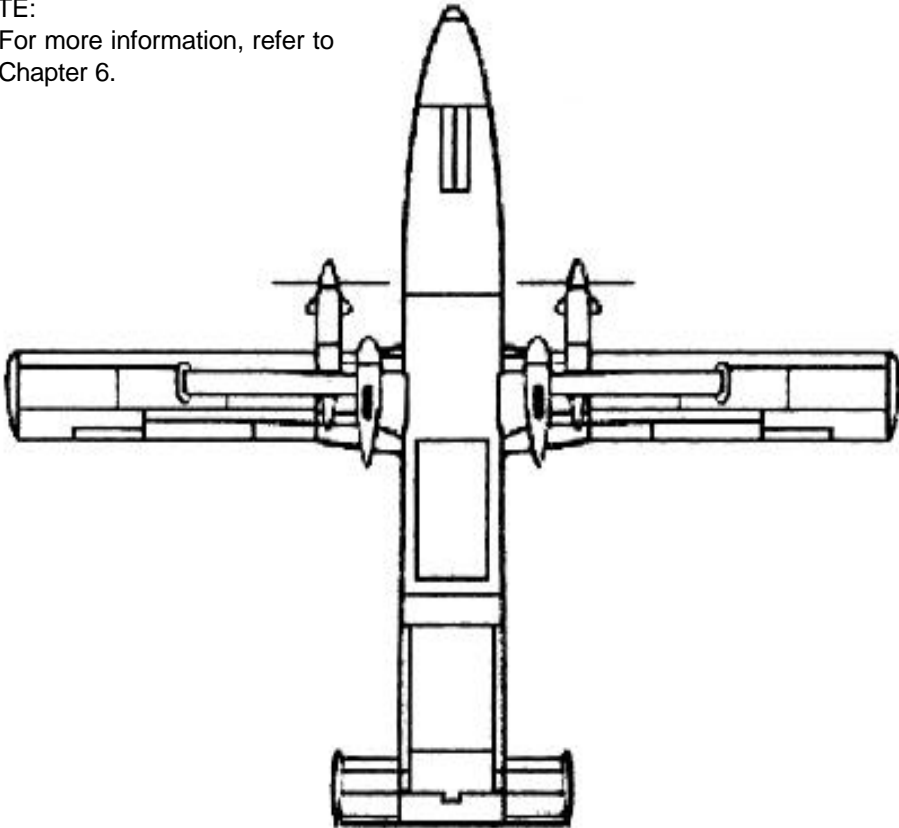
AIRCRAFT PRE-FIRE PLAN

AIRCRAFT TYPE: Shorts SD 330/C-23A Sherpa Reference:T.O. 00-105E-9

AIRCRAFT DESCRIPTION: In 1990 the Forest Service and Department of the Interior acquired several military excess C-23 Sherpa's, a military variation of the Shorts SD 330. These aircraft were configured for smokejumping, paracargo operations, and transportation of people and cargo. The interior of the Shorts has plenty of space for cargo. These aircraft are all-weather capable and provide quick response to agency needs across the country.

Length (ft)	Wing Span (ft)	Turning Radius (ft)	Cruise Speed (mph)	Range Loaded (St. miles)	Gross Weight (lbs.)	Contract Op. Wt. (lbs.)	Payload (lbs)	Number Seats	Number Jumpers
58	75	n/a	148/170	500	n/a	n/a	3500	20	10

NOTE:
For more information, refer to
Chapter 6.



USFS AIRCRAFT

SHORTS SD 330/C-23A SHERPA

HAZARDS

1. 672 gallons / 4502.4 pounds of jet fuel on-board (fully loaded), located in wings and fuselage.
2. 3 oxygen cylinders in various locations near front of aircraft.
3. Four batteries located in front of aircraft. Emergency battery in tail.
4. Propeller danger zone 25 feet
5. Turbine blade failure 300 feet.
6. Engine exhaust 1500 feet.

APPROACH TO ENTRY POINT (Engines running 80%+)

1. Approach directly from the nose, avoiding the propellers for a ten-foot radius.

PRE-DESIGNATED RESCUERMAN ACTIONS

1. GAIN ENTRY
 - a. **Normal entry –**
 - I. Turn handle on main cabin entry door, located left side aft of the wing, clockwise and pull open.
 - II. Turn handle on forward cargo loading door, located on left side forward of the wing, door clockwise and pull open.
 - b. **Emergency entry –**
 - I. Turn handle on any of two forward emergency exits left and right clockwise and pull to open.
 - II. Turn handle on flight compartment emergency exit, located over cockpit, clockwise and pull to jettison.
 - III. Turn handle on main cabin entry door, located left side aft of the wing, clockwise and pull to open.
 - IV. Turn handle on forward cargo loading door, located on left side forward of the wing, clockwise and pull to open.
 - c. **Cut-In –** Cut-in area each fuselage side aft of wing.
2. ENGINE SHUTDOWN
 - a. Retard fuel levers, located on center console, to OFF position.
 - b. Retard LP valve levers, located in roof console, to SHUT position.
 - c. If fire buttons are illuminated or if there is evidence of fire in the vicinity of the engines, actuate the Fire Extinguisher Push Buttons located in the center overhead engine services panel.
 - d. Place electrical master switch, located left overhead electrical switch panel, to OFF position.
3. AIRCREW EXTRACTION
 - a. Unlatch lap belts and remove shoulder harness from crewmembers.
 - b. Passenger seats are equipped with lap belts only.

OTHER FACTORS

1. **Special tools/equipment:** Power rescue saw, crash axe and 14 foot ladder.
2. Locations of switches and equipment and emergency procedures may vary for individual aircraft. Crews should be briefed prior to aircraft dispatch.

COMMUNICATIONS PLAN: National Air Tanker frequency – 123.975. This is the frequency used by all air tanker bases, air tankers, air tanker support aircraft during fire fighting operations.

USFS HELICOPTER

HELICOPTER CRASH-RESCUE DIAGRAMS

NOTE:

This section provides additional diagrams of various makes and models of helicopters. The intent is to provide crash-rescue personnel on helibases or at other locations with general information concerning aircraft layout, emergency ingress and egress, and emergency procedures for fuel and electrical power shutoff. It is essential that helibase and other personnel with crash-rescue responsibilities, or who may be assigned such responsibilities, receive a briefing by the pilot on the specific characteristics of the helicopter with which they are working.

NOTE:

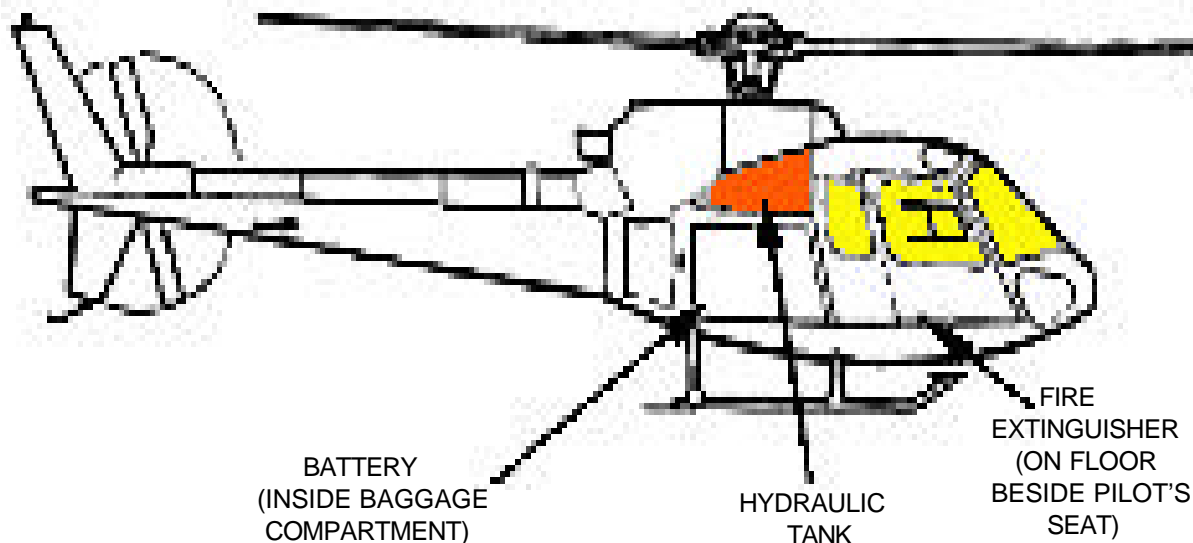
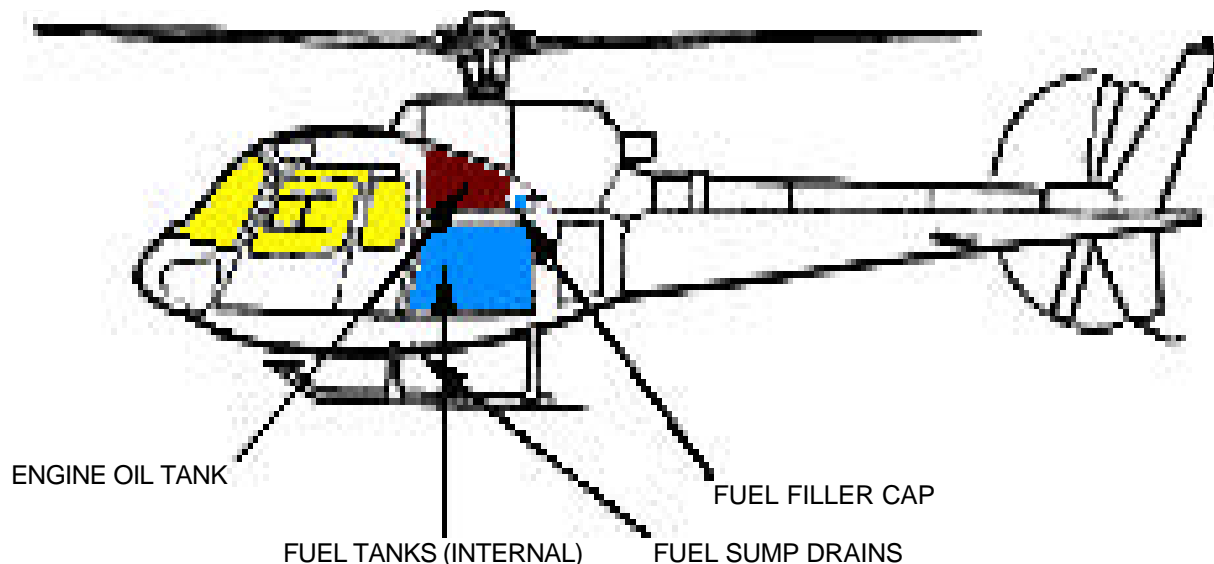
The following helicopter information were taken from submitted charts which have been formatted and color illustrated for this manual.

NOTE:

The following applies to all aircraft:

LOCATION OF SWITCHES AND EQUIPMENT AND EMERGENCY SHUTDOWN PROCEDURES MAY VARY FOR INDIVIDUAL AIRCRAFT. CREWS SHOULD BE BRIEFED PRIOR TO HELICOPTER DISPATCH.

AEROSPATIALE AS 350

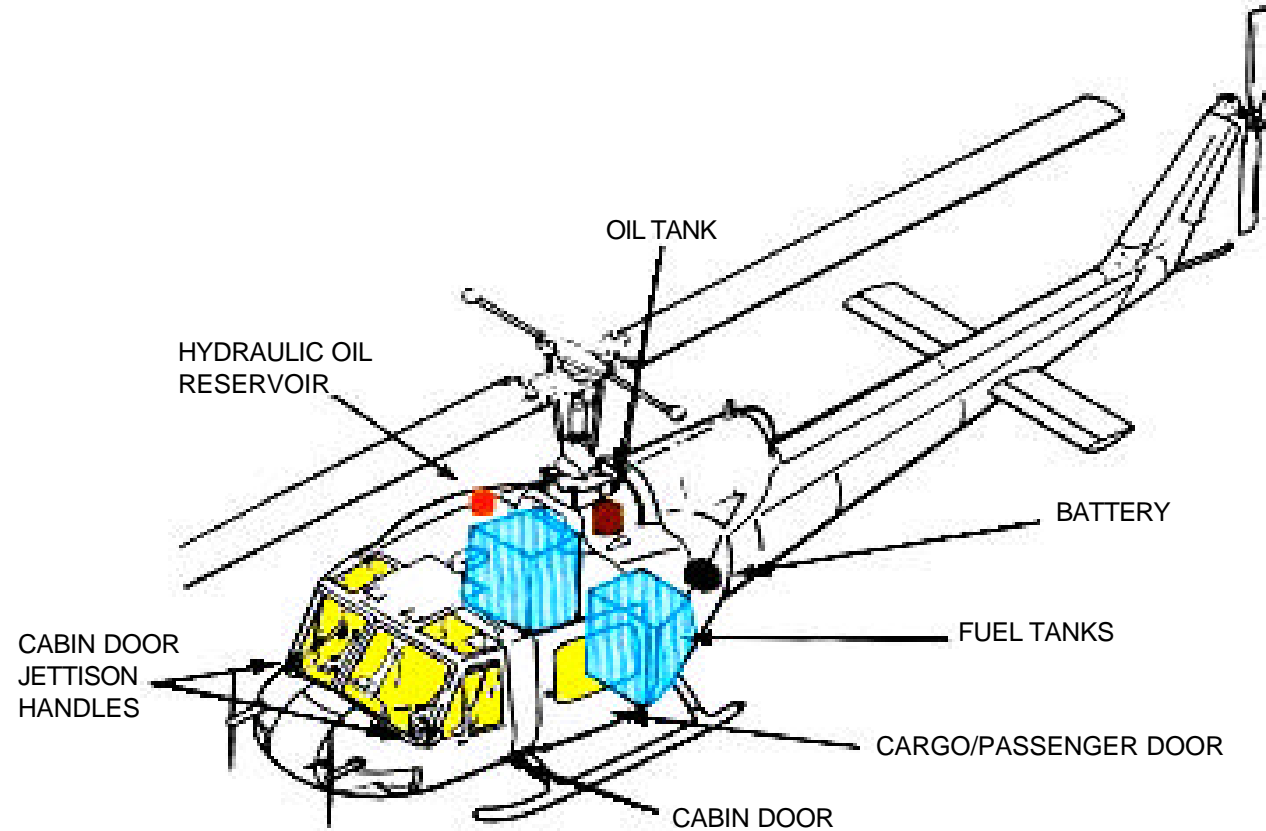


USFS HELICOPTER

BELL 204B/UH-1A,B,C

1. AIRCRAFT ENTRY

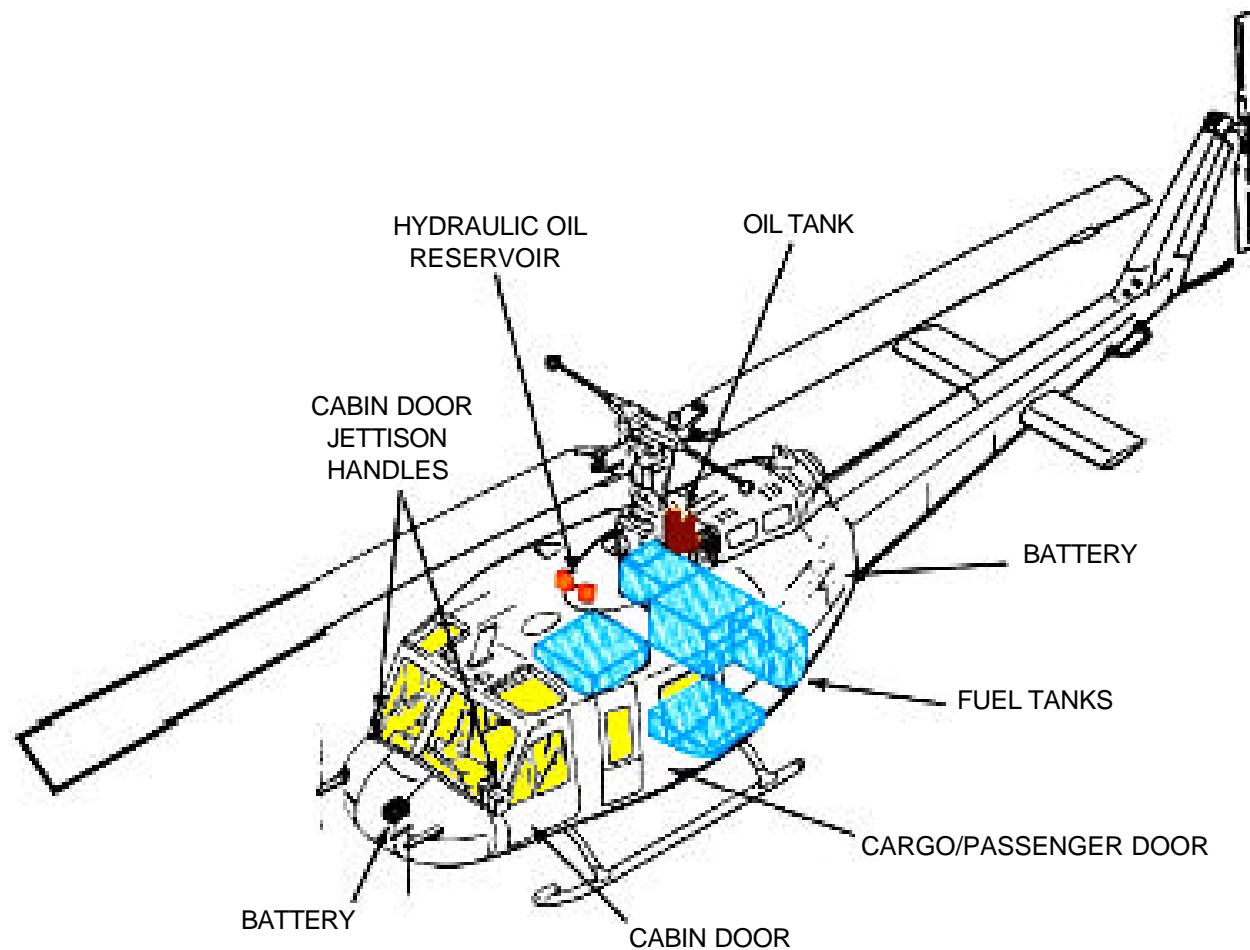
- a. To gain entrance to cabin, use external jettison handle. If this fails, slide or break either cabin door window.
- b. If cabin door or cargo passenger door fails to open, break windows or windshield.



USFS HELICOPTER

1. AIRCRAFT ENTRY

- a. To gain entrance to cabin, use external jettison handle. If this fails, slide or break either cabin door window.
- b. If cabin door or cargo passenger door fails to open, break windows or windshield.

BELL 205/UH-1D,H

USFS HELICOPTER

BELL 206B/OH-58

1. AIRCRAFT ENTRY

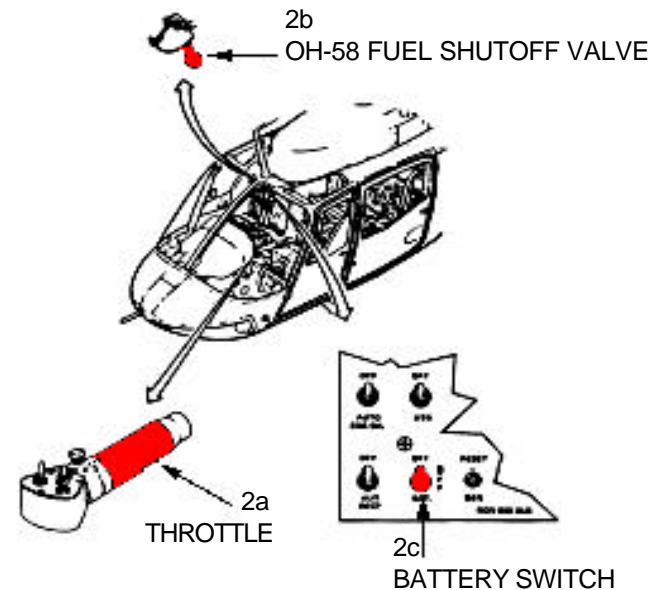
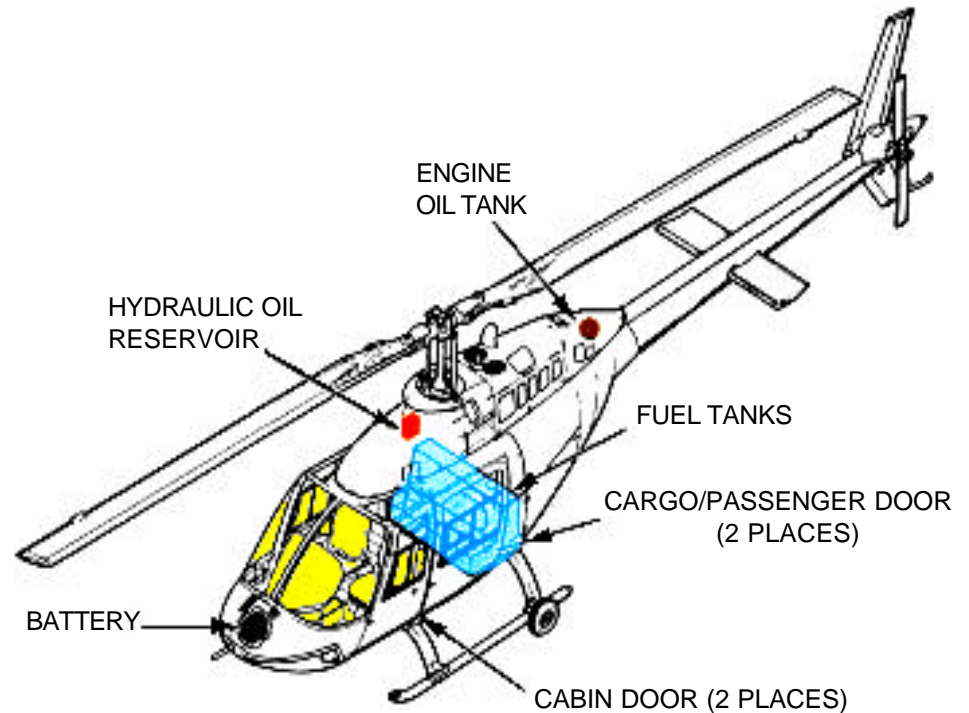
- a. If cabin door or cargo passenger door fails to open, break windows or windshield.
- b. All doors have recessed handles pointing forward, pull out and back outside. Inside, pull striped handles up.

2. ENGINE SHUTDOWN

- a. Rotate throttle, located on pilot's collective pitch stick, to OFF position.
- b. For OH-58, pull fuel shutoff valve, located on overhead in crew compartment, aft to OFF position. For 206B, turn fuel switch on panel to OFF position.
- c. Place battery switch, located on the overhead switch panel, to OFF position.

3. AIRCREW EXTRACTION

- a. Unlatch lap belts and remove shoulder harness from crewmember(s).



USFS HELICOPTER

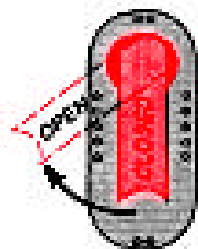
1. AIRCRAFT ENTRY

- a. To gain entrance to cabin, slide or break either cabin door window.
- b. If cabin door or cargo passenger door fails to open, break windows or windshield.
- a. Pilot and passenger door have recessed handles pointing forward.
External: Pull out and back.
Internal: Pull up.

2. EMERGENCY PROCEDURE:

- a. Wait until all rotors have stopped.
- b. Shut off fuel switch, located on the instrument panel.
- c. Access battery, located in the nose of aircraft
Remove front panel and rotate battery terminal knob(s) counterclockwise and disconnect cable(s) from battery.
- d. Evacuate personnel if necessary.
- e. Make sure ELT is in the ON position and remove from aircraft. ELT is located in the chin bubble area on the pilot's side.
- f. Remove fire extinguisher, located between the two front seats at shoulder level.
- g. Remove First Aid Kit, located between the two aft facing the seats in the rear passenger area.
- h. If possible, secure the area from outside interference.

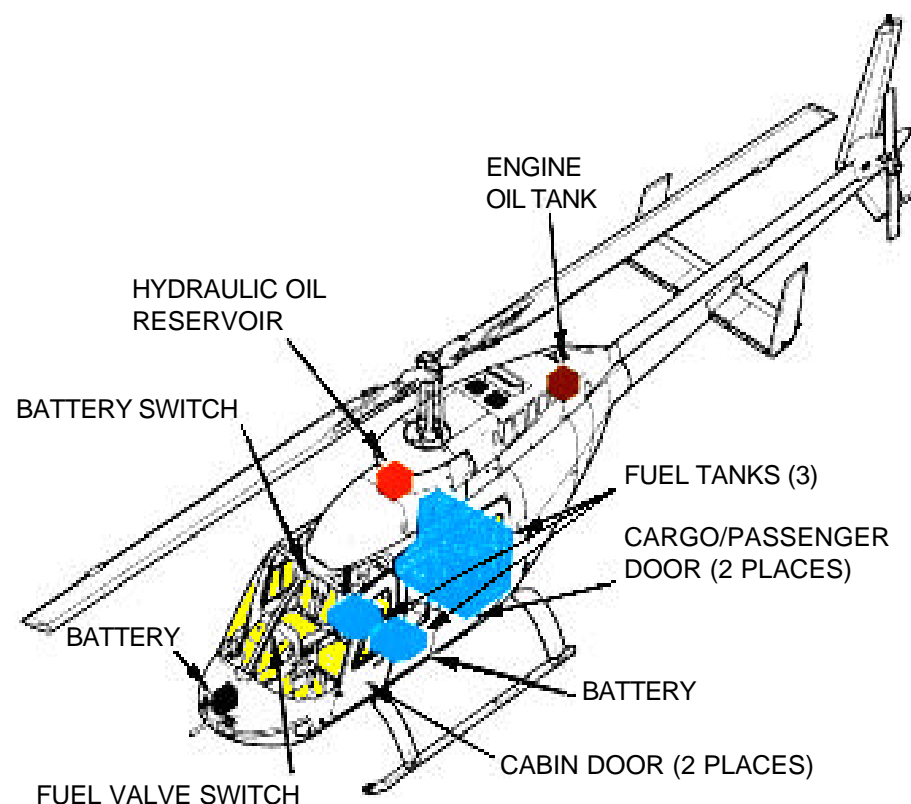
PANEL DOOR HANDLE



OPENING INSTRUCTIONS

1. Open rear door
2. Lift panel door handle
3. Rotate as shown

BELL 206L-3/OH-58

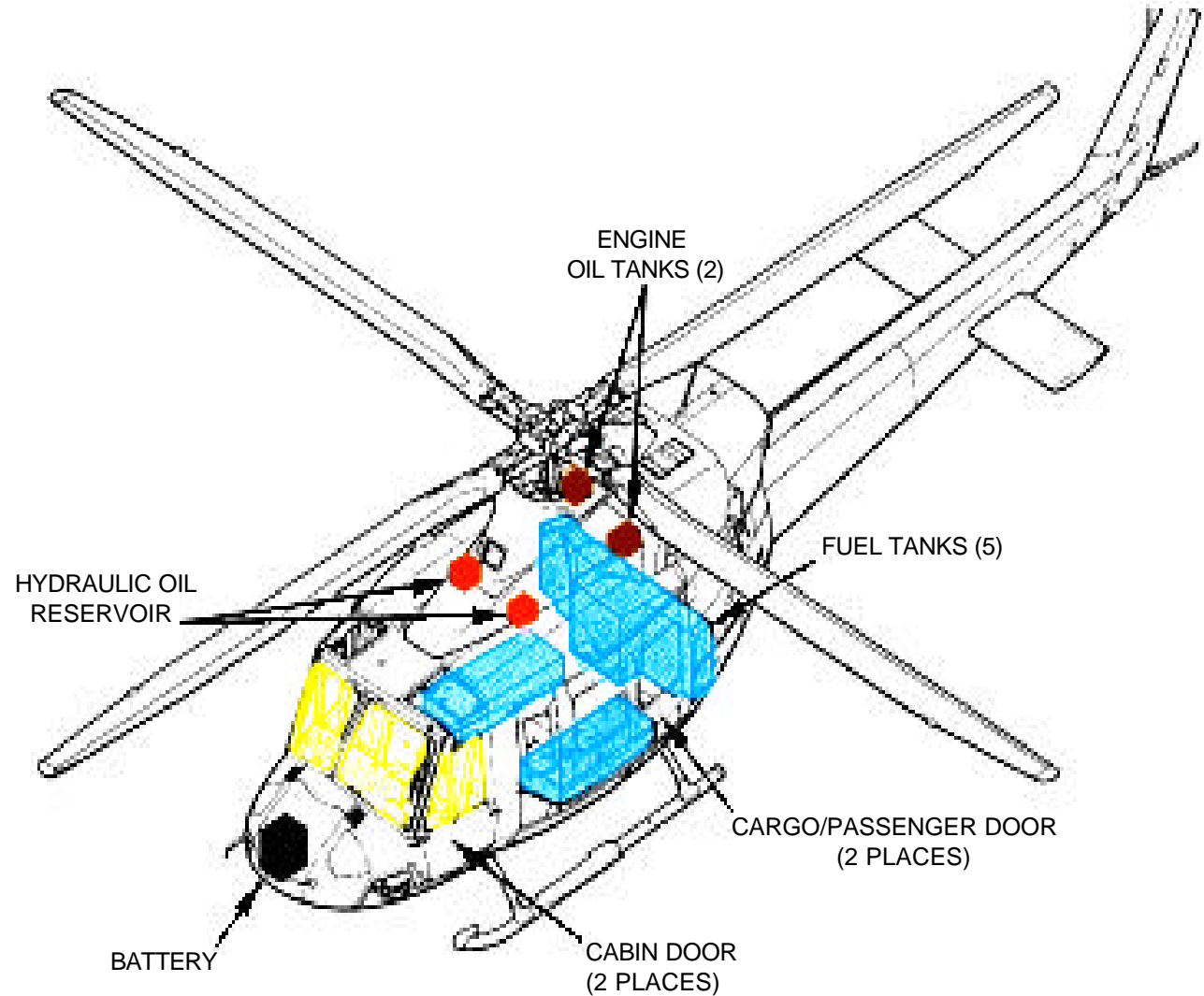


USFS HELICOPTER

BELL 212/412

1. AIRCRAFT ENTRY

- a. To gain entrance to cabin, slide or break either cabin door window.
- b. If cabin door or cargo passenger door fails to open, break windows or windshield.

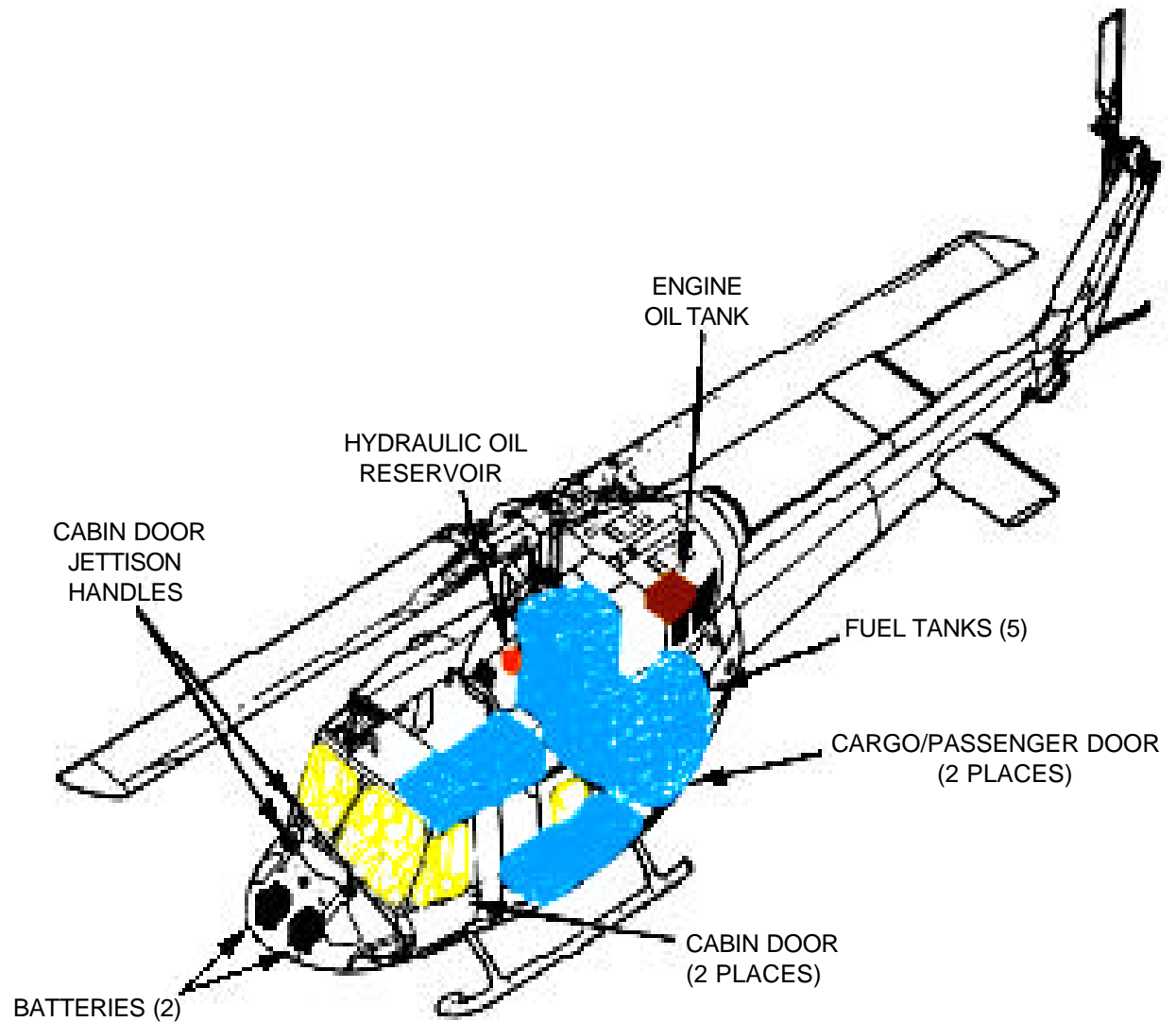


USFS HELICOPTER

BELL 214

1. AIRCRAFT ENTRY

- a. To gain entrance to cabin, use external jettison handle. If this fails, slide or break either cabin door window.
- b. If cabin door or cargo passenger door fails to open, break windows or windshield.

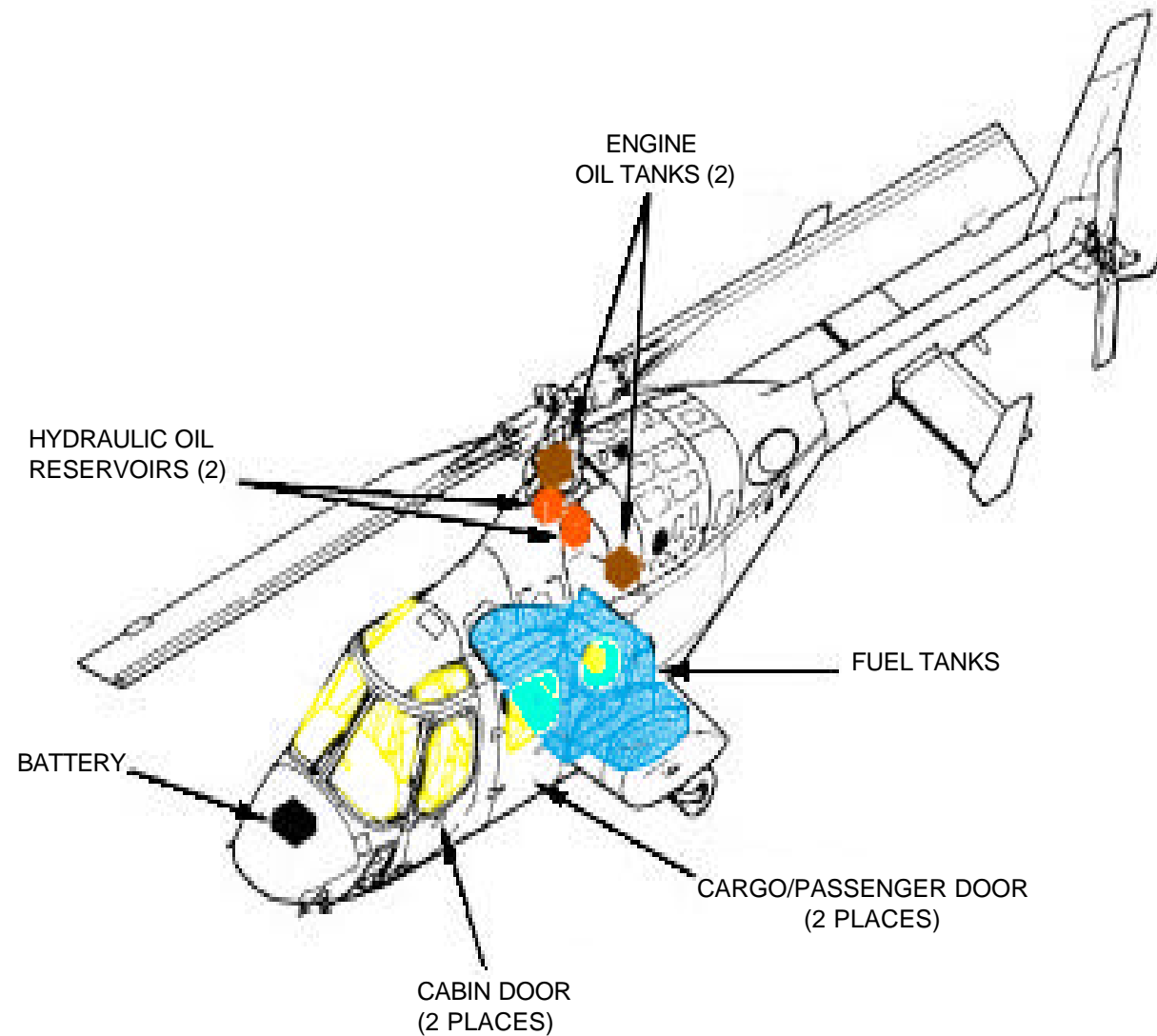


USFS HELICOPTER

BELL 222

1. AIRCRAFT ENTRY

- a. If cabin door or cargo passenger door fails to open, break windows or windshield.



USFS HELICOPTER

NOTE:

THE FOLLOWING PROCEDURES WILL BE FOLLOWED IN THE EVENT OF FIRE OR OTHER EMERGENCY DURING HOT REFUELING:

1. HOT REFUELING EMERGENCY

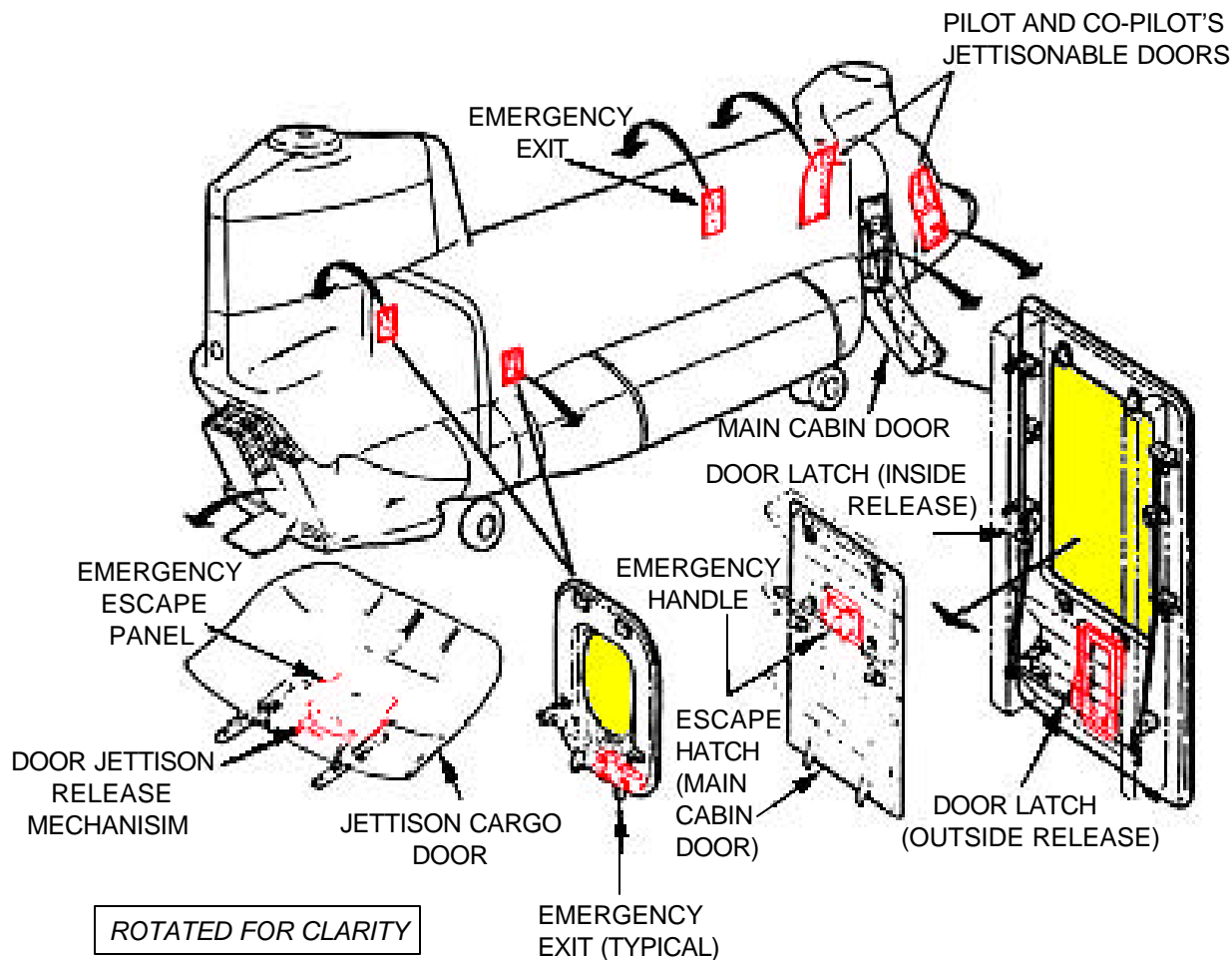
- Place engine condition levers (ECLs) in the STOP position.
- Pull T-handles.
- Turn off boost pumps.
- Jettison pilot and Co-pilot emergency doors/windows (bubbles).

NOTE:

Consider location of fire due to location of refueling point before jettisoning cockpit doors.

- Evacuate aircraft.
- Direct fire extinguisher on the fire.

BOEING/VERTOL 234

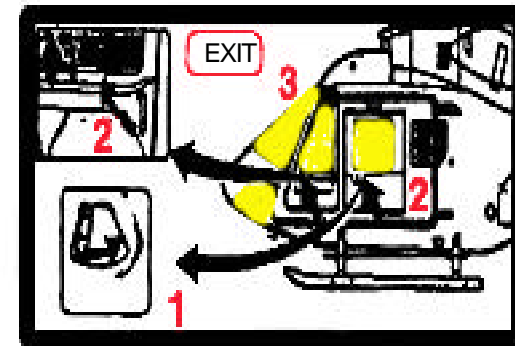


USFS HELICOPTER

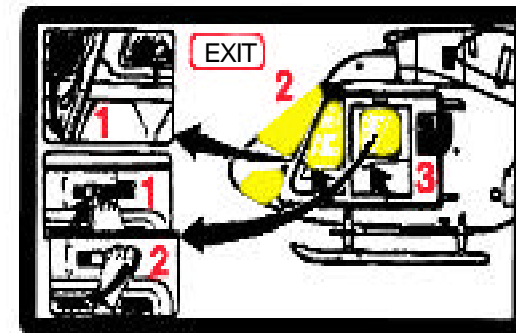
1. EMERGENCY PROCEDURES

- Alert and evacuate all crew and passengers.
- Close both emergency fuel valves in cockpit.
- Place both fuel supply pumps to OFF in cockpit.
- Place both power levers to OFF in cockpit.
- Place the battery and generators to OFF in cockpit.
- Extinguish fire with hand fire extinguisher.

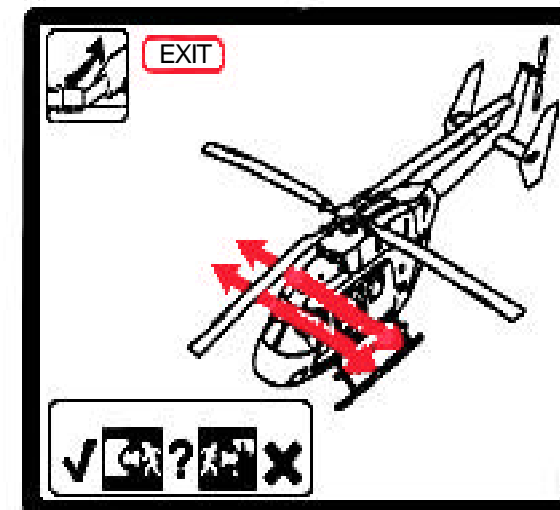
EUROCOPTER BK-117



NORMAL OPERATION



EMERGENCY JETTISON



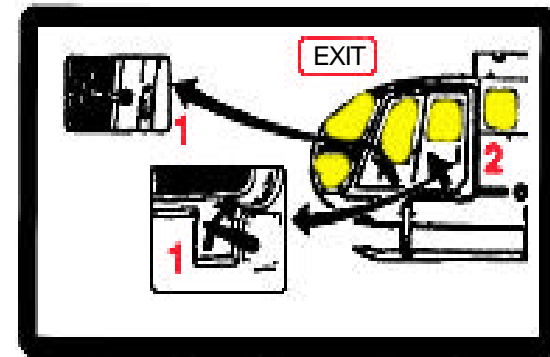
ACCESS OUTSIDE BEFORE OPENING

USFS HELICOPTER

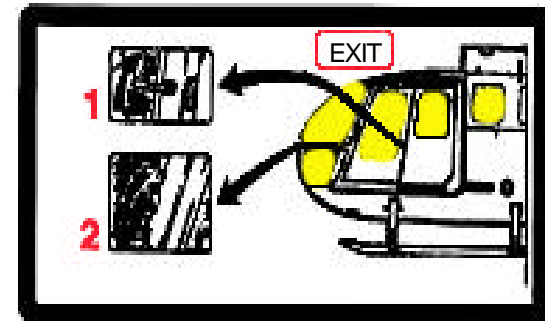
1. EMERGENCY PROCEDURES

- a. Alert and evacuate all crew and passengers.
- b. Close both emergency fuel valves in cockpit.
- c. Place both fuel supply pumps to OFF in cockpit.
- d. Place both power levers to OFF in cockpit.
- e. Place the battery and generators to OFF in cockpit.
- f. Extinguish fire with hand fire extinguisher.

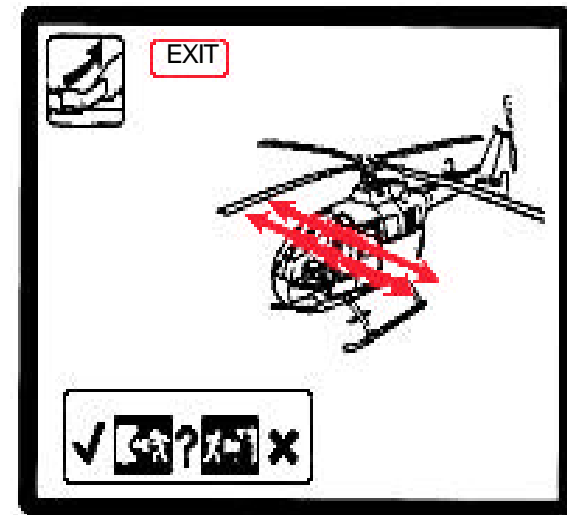
EUROCOPTER BO-105



NORMAL OPERATION



EMERGENCY JETTISON



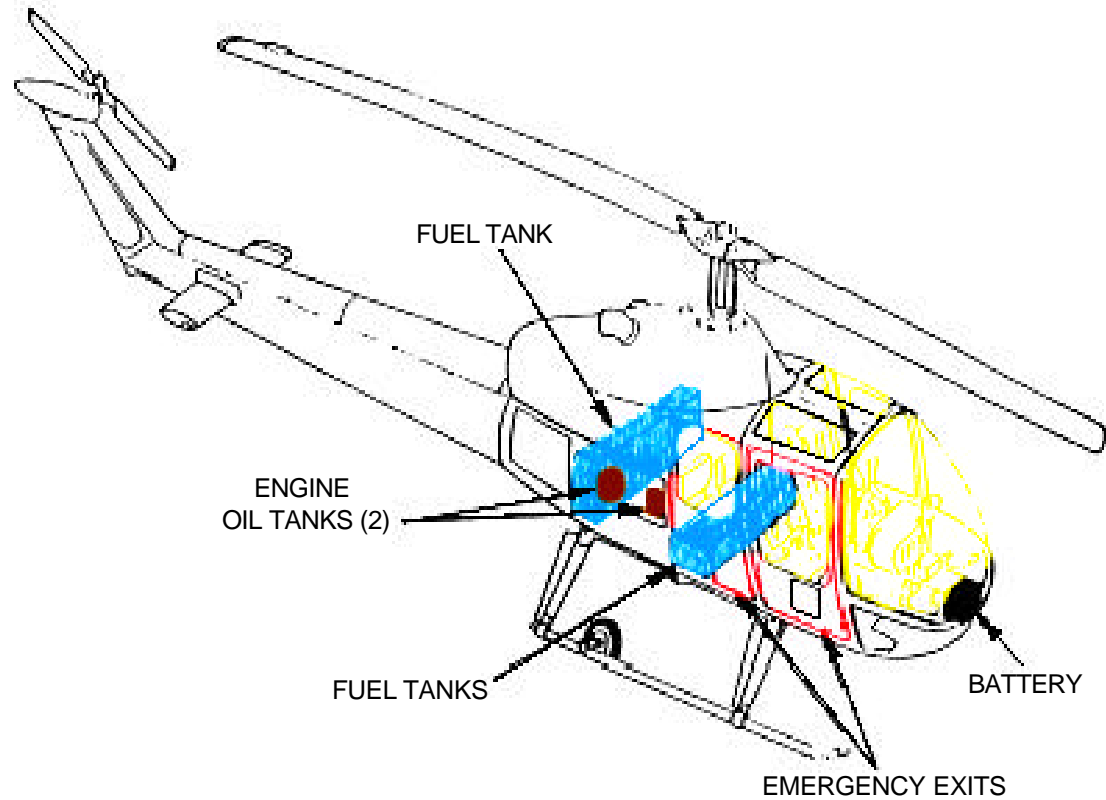
ACCESS OUTSIDE BEFORE OPENING

USFS HELICOPTER

1. AIRCRAFT ENTRY

- a. If cabin door or cargo passenger door fails to open, break windows or windshield.

FAIRCHILD HILLER FH-1100



USFS HELICOPTER

1. AIRCRAFT ENTRY

- a. Emergency entrances may be gained through cabin doors and cargo-passenger doors.
- b. If doors fail to open, break glass to gain access to door jettison handle. Pull to jettison door.

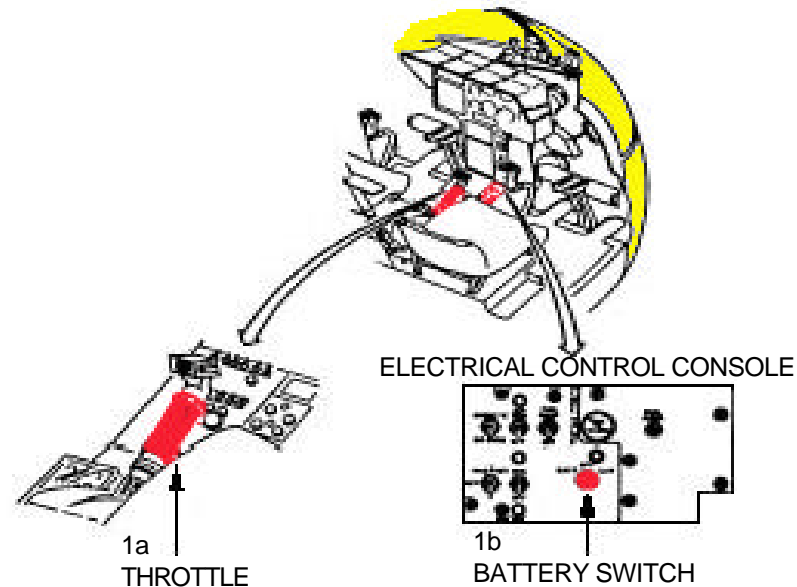
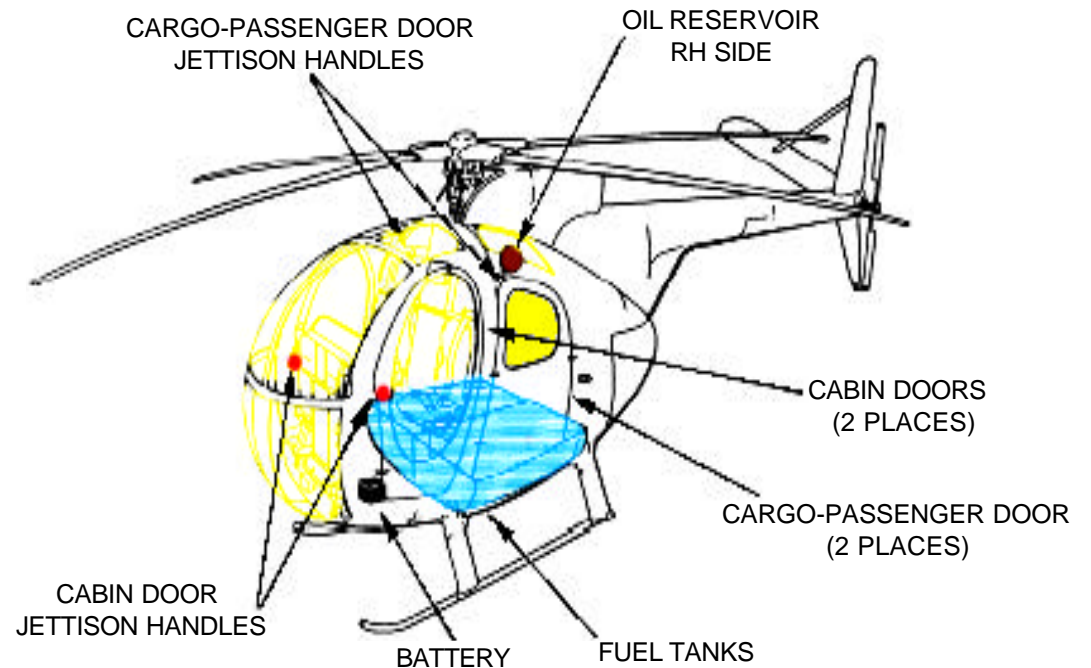
2. ENGINE SHUTDOWN

- a. Rotate throttle control, located on pilot and co-pilot collective levers, to fuel CUT-OFF position.
- b. Place battery switch, located on electrical control console, to OFF position.

3. AIRCREW EXTRACTION

- a. Unlatch lap belt and remove shoulder harness from crewmember(s) and passengers (as applicable).

McDONNELL DOUGLAS (HUGHES) 500-C,D (OH-6)



USFS HELICOPTER

1. EMEGENCY EGRESS

- a. Cockpit sliding windows, cargo doors, passenger doors and emergency escape hatches can be jettisoned by pulling appropriate emergency release handles.

2. ENGINE SHUTDOWN

- a. Twist throttle grip, located on control stick right of center console, to OFF position.
- b. Place the fuel shutoff valve switches, located on the center console, to CLOSED position.
- c. Place the fuel boost pump switches, located on the center console, to OFF position.
- d. Place battery and generator switches, located on center console, to OFF position.
- e. If rotor blades are turning: Place red handle rotor brake, located right of overhead switch panel, by pulling down and forward, to the ON position.

3. AIRCREW EXTRACTION

- a. Unlatch lap belt and remove shoulder harness from crewmember(s) and passengers (as applicable).

SIKORSKY S-58T

